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Abstracts 331-649

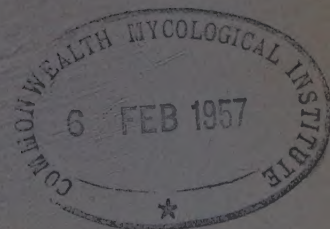
# THE VETERINARY BULLETIN

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# THE VETERINARY BULLETIN

Vol. 27]

February, 1957

[No. 2

## DISEASES CAUSED BY BACTERIA AND FUNGI

GORRILL, R. H. (1956). **Effect of superinfection on phage sensitivity in staphylococci.**—*Nature, Lond.* **178**, 91-92. **331**

A particular staphylococcus formed a stable lysogenic system with one phage. Infection with a second phage resulted in sensitivity to the second phage, (which is believed to replace the first pro-phage), and to other phages.

—A. SEAMAN.

BACHRACH, U., GROSSOWICZ, N. & GUREVITCH, J. (1956). **Sensitivity of *Staphylococcus aureus* to penicillin in various media.**—*Proc. Soc. exp. Biol., N.Y.* **93**, 116-119. [Authors' summary modified.] **332**

Pyruvic acid or glucose, when added to a casein hydrolysate medium, increased the antibacterial effect of penicillin on *Staph. aureus*. Lactic or acetic acids, on the other hand, had no such effect. The possible mechanisms of the enhanced penicillin activity in the presence of pyruvic acid are discussed.

STAMATOVIĆ, S., MIHAJLOVIĆ, B. & ATANAKOVIĆ, M. (1956). **Diplokokna infekcija ovaca. [Diplococcus infection in sheep.]**—*Vet. Glasn.* **10**, 99-103. [In Croat. English summary.] **333**

Cause of 323 deaths among 2,120 sheep on a farm was investigated. They had died within 24-48 hours after onset of the first symptoms which included inappetence and diarrhoea. In some there was cough, bronchopneumonia and pleuritis. There was no fever. An unidentified diplococcus was isolated from heart, spleen and liver of two lambs and on one occasion from the intestine. Filtered intestinal contents, when injected into mice, failed to reveal the presence of a toxin.—E.G.

MCKERLEAN, B. A. (1956). **Meningo-encephalitis in piglets due to a motile diplococcus.**—*Irish vet. J.* **10**, 174-178. [Author's summary slightly modified.] **334**

An account of an outbreak of meningo-

encephalitis in a litter of piglets, 4 weeks old. A motile pleomorphic non-haemolytic streptococcus was isolated from the brain of a piglet. The organism did not fall into Lancefield's Groups A to G. The disease was reproduced in a young pig and a second piglet died from vegetative endocarditis caused by the organism. Young rabbits, mice and g. pigs were readily infected and the organism showed a tendency to settle in the brain and certain joints.

NEGRETTI, F. (1956). **Preparazione dei sieri tipospecifici per lo "Streptococcus agalactiae". [The preparation of type-specific sera for *Streptococcus agalactiae*.]**—*Arch. Vet. Ital.* **7**, 219-230. [English, French, German and Spanish summaries.] **335**

Serological investigations in rabbits were carried out with two strains of *Str. agalactiae* inactivated by 4% formalin, by penicillin and by ultrasonic waves. The penicillin antigens proved superior in the production of agglutinins. Antigens lysed ultrasonically were superior in the production of precipitating sera, of good specificity. Formolized antigens gave only average results.—I. W. JENNINGS.

KARUSH, F., IACocca, V. F. & HARRIS, T. N. (1956). **Growth of group A hemolytic streptococcus in the steady state.**—*J. Bact.* **72**, 283-294. **336**

The continuous culture technique was used in this study. The apparatus, medium and procedures are described in detail. Steady-state growth over a wide range of growth rate was established for at least 78 generations. There was characteristic relationship between the growth rate and the steady-state pH. The rate of glycolysis decreased less rapidly than the growth rate with pH; as a result the utilization of glucose increased with the growth rate.

—T.E.G.R.

HEIDRICH, H. J. & KELCH, F. (1956). **Zur Ätiologie der akuten Mastitis des Rindes.**



[Aetiology of acute mastitis in cattle.]—*Berl. Münch. tierärztl. Wschr.* 69, 357-359. [English summary.] 337

Out of 50 cases of acute mastitis 14 were caused by *Streptococcus agalactiae*, 12 by *Bacterium coli*, 4 by *Corynebacterium pyogenes*, 2 by *Bact. aerogenes*, 1 by *Staphylococcus albus* and 1 by *Proteus vulgaris*. In 16 no causal agent could be demonstrated.—M.G.G.

HEIDENREICH, A. (1956). Die Residualmilch und ihre Beziehung zur Therapie der chronischen Rindermastitis. [Residual milk treatment of chronic mastitis in cattle.]—*Tierärztl. Umsch.* 11, 204-207. 338

Residual milk was removed more easily after i/v injection of 30-60 units of oxytoxin than after massage of the udder or uterus. The cellular content of this milk was high. Of 50 cows with chronic mastitis, 44 were cured by removal of the residual milk followed by the instillation of antibiotics.—M.G.G.

HOPPE, R., DOMANSKI, E. & DOBROWOLSKA, A. (1956). Causes and treatment of inflammations of the genital tract in the mare with special reference to the process caused by haemolytic cocci. — *Proc. IIIrd Int. Congr. Anim. Reprod.* Cambridge, 1956. Sect. II. pp. 83-85. [French summary.] 339

A survey of 300 mares over 7 years revealed that  $\beta$  haemolytic streptococci Group C were responsible for severe inflammatory conditions of the genital tract. Cures were effected in some recent infections but very often the organisms persisted in the cervical mucus plug of pregnant mares. Foetal resorption was common during the first few weeks of pregnancy. Old standing inflammation responded to antibiotic treatment. Of 30 mares in which the vulva failed to close 24 conceived after suture. Local treatment with antibiotics was effective when the oestrous cycle was regular. Iodine preparations followed by antibiotics also gave good results. Fungus infection of the uterus followed antibiotic treatment in two cases.—T.E.G.R.

STEIN, C. D. & VAN NESS, G. B. (1956). Anthrax in livestock during 1955.—*Vet. Med.* 51, 539-540 & 542. 340

In 1955 there were 122 outbreaks of anthrax in 20 States of the U.S.A., with an estimated loss of 264 animals, chiefly cattle. The suspected sources of infection were contaminated soil in 100 outbreaks, post-vaccination infection in one outbreak, and unknown in 21 outbreaks.

—M.G.G.

WALKER, J. (1956). Contribution à l'étude du diagnostic pratique de la tuberculose au moyen de l'inoculation au cobaye. [Guinea-pig inoculation in the diagnosis of TB.]—*Rev. Immunol.* 20, 273-285. 341

The macroscopic and microscopic lesions in the g. pig are described and the diagnostic value of this method is discussed. It is pointed out that, while a positive diagnosis may be made on the lesions produced in the g. pig, the absence of lesions does not justify a negative diagnosis.

—T.E.G.R.

PATERSON, A. B. (1956). The incidence and causes of tuberculin reactions in non-tuberculous cattle. — *Adv. Tuberc. Res.* 7, 101-129. 342

A review of the literature with 118 references. The incidence of mammalian tuberculin reactions in non-tuberculous cattle reported from different countries cannot be compared because of variations in the tuberculins and tests used, differences in the meaning of terms, and differences in the incidence of known causes of non-specific sensitization. The chief of these are infection or contact with avian TB. and infection with Johne's disease or "skin tuberculosis", but any infection with a mycobacterium causing disease in cattle, or contact with mycobacteria pathogenic for other species of warm blooded animals, can cause sensitivity. Cattle do not readily develop sensitivity to mammalian tuberculin by contact with saprophytic mycobacteria alone but require an adjuvant; nor do they readily develop such sensitivity in the course of non-mycobacterial infections; they do not readily develop tuberculin type sensitivity.

—A. ACKROYD.

BERLIK, E. M. (1956). Vergleichende Untersuchungen von B'ut- und Milchsera mittels der kombinierten Hämagglutinations-Hämolysereaktion nach Middlebrook und Dubos im Hinblick auf eine schnellere Erkennung eutertuberkulöser Kühe. [Comparative examination of blood serum and whey by the combined haemagglutination-haemolysis reaction as a means for the more rapid diagnosis of TB. of the udder.]—*Rindertuberkulose*, 5, 78-96. 343

Positive results with the combined haemagglutination-haemolysis reaction were obtained in 43 out of 64 samples of whey in which tubercle bacilli were demonstrable by microscopic examination, but only in 4 out of 21 samples in which infection was demonstrable by animal inoculation; 38 out of 45 blood sera from infected



animals gave positive titres of the order 1:128. Of 108 blood samples from TB.-free cattle, all except one gave a negative result, and 16 milk samples were all negative. The titres of the combined haemagglutination-haemolysis reaction did not appear to be influenced by other, non-tuberculous, diseases.—F. K. LEEB.

KUTLEŠA, I. & MARIĆ, I. (1956). Nutritivna fotosenzibilizacija ošišane kože kao smetnja u prosuđivanju tuberkulinskih reakcija. [Nutritional photosensitization in cattle impeding correct judging of the tuberculin reaction.]—*Vet. Glasn.* 10, 268-271. [In Croat. German summary.] 344

Dermatitis with crust formation was observed in shaved parts of the skin in a number of tuberculin-tested cows. The condition was not regarded as a non-specific reaction but was associated with photosensitization. It was also present on the udder, vulva and muzzle of non-tested cattle housed in the same byre. Cattle housed in another byre were free from the condition.—E.G.

GALLO, C. & GUERCIO, V. (1956). Sulla presenza del micobatterio tubercolare nelle carni di bovini affetti da tubercolosi cosiddetta localizzata. [*Mycobacterium tuberculosis* in the meat of cattle affected with localized TB.]—*Vet. ital.* 7, 971-975. [English, French and German summaries. English summary modified.] 345

*M. tuberculosis* was isolated from the meat of 5 out of 25 slaughtered cattle with localized TB.

PESCETTI, G., PELOCCHINO, A. M., DESTEFANIS, E. & CONTERNO, G. (1956). Il cortisone e la streptomicina nel trattamento della tubercolosi sperimentale: quadro proteico e reazione di Middlebrook-Dubos. [The effect of cortisone and streptomycin on the serum proteins and on the Middlebrook-Dubos reaction in experimental TB.]—*G. Batt. Immun.* 49, 243-254. [English, French and German summaries.] 346

In g. pigs infected with a strain of *M. tuberculosis* (human type) of attenuated virulence, cortisone produced an increase in gamma-globulin, as shown by electrophoretic analysis, and in positivity in the Middlebrook-Dubos haemagglutination reaction.—F. R. PAULSEN.

GROSSO, A. M. (1956). Reseña sobre tuberculosis en los monos del Jardín Zoológico de Buenos Aires. [Tuberculosis in monkeys in

the Buenos Aires Zoo.]—*Gac. vet., B. Aires.* 18, No. 99, pp. 9-16. 347

In the years 1943 to 1950, TB. was a very rare disease in monkeys in the Buenos Aires Zoo. In 1951 and 1952, however, there were 20 deaths from this cause. G. believed that the resistance of the animals may have been lowered by a sudden change in diet. Cultural examination in 8 cases indicated that the human type of bacillus was involved. The outbreak was controlled by the use of B.C.G. vaccine, and no further cases had since occurred.

—I. W. JENNINGS.

FRANCIS, J. (1956). Natural and experimental tuberculosis in monkeys. With observations on immunization and chemotherapy.—*J. comp. Path.* 66, 123-135. 348

In captivity, the monkey is highly susceptible to TB. although the disease has not been recorded in wild monkeys. In 20 naturally infected *M. mulatta* monkeys, the disease was confined to the thorax in only 3, but the mesenteric lymph nodes had not been affected. All the classical signs of TB. were present. The tuberculin reaction was negative in 3 of 17 infected animals. Treatment of 9 naturally infected monkeys with streptomycin, 10 mg. per kg. daily, resulted in marked clinical improvement and apparent sterilization of lesions in all except 2. The addition of dapsone (4:4'-diaminodiphenylsulphone) 10 mg. per kg. twice daily, increased the rate of clinical improvement and was well tolerated. Treatment of experimentally infected monkeys with 7438 (5-amino-7-methyl-1:2:4:6-tetra-azaindene) was less effective. Vaccination with large doses of B.C.G. produced allergy and an immunizing effect, but small doses produced only allergy.

—A. ACKROYD.

SEGAL, W. & BLOCH, H. (1956). Biochemical differentiation of *Mycobacterium tuberculosis* grown *in vivo* and *in vitro*.—*J. Bact.* 72, 132-141. 349

By differential centrifugation of homogenized sucrose albumin suspensions of tuberculous mouse lungs the authors were able to separate tubercle bacilli from tissue material. These differed in their metabolic reactions and respiratory processes from a similar strain grown *in vitro*. On culture the separated bacilli adopted the characteristics of the *in vitro* strain.

—J. SEAMER.

GUTIÉRREZ-VÁZQUEZ, J. M. (1956). Studies on the rate of growth of mycobacteria. I. Generation time of *Mycobacterium tuberculosis* on



several solid and liquid media and effects exerted by glycerol and malachite green.—*Amer. Rev. Tuberc.* 74, 50-58. [French and Spanish summaries.] 350

Droplets of increasing dilutions of the bacilli were placed on the media and the time to the first appearance of visible growth noted. The generation time was calculated from the slope of time against log. inoculum. Growth of the H37Rv strain, and of those from sputum concentrates, was fastest on Loewenstein Jensen, slower on Loewenstein and slowest on Petragani-McNabb medium. The optimum concentration of glycerol in Sauton's medium was 2-4%, and malachite green, while delaying growth, did not inhibit it completely at 1:1,000.

—A. SEAMAN.

GOERTTLER, V. (1956). Allergische Reaktionen nach Verletzungen beim Tuberkulinisieren von Rindern. [Allergic reaction in man following injury during tuberculin testing in cattle.]—*Mh. VetMed.* 11, 385-387. 351

Three cases are described in detail of severe allergic reaction after a finger had been pricked during tuberculin testing of cattle. In each case there had been previous similar accidents, which had caused only slight swellings.—M.G.G.

RISER, W. H. & KARLSON, A. G. (1956). Tuberculosis in the dog.—*J. Amer. vet. med. Ass.* 129, 118-120. 352

Active and calcified lesions were found in the liver and kidneys of an 8-year-old bitch. Human type tubercle bacilli were isolated by culture and by g. pig inoculation. The case history showed 17 months' contact as a puppy with a tuberculous child. One offspring which had remained with the bitch for 3 years was still negative to tuberculin 7 years later.

—A. SEAMAN.

FREUDIGER, U. (1956). Beobachtungen zur Epidemiologie und Klinik der Tuberkulose des Hundes und der Katze. [Observations on the epidemiology and clinical features of TB. in dogs and cats.]—*Schweiz. Arch. Tierheilk.* 98, 195-205. [English, French and Italian summaries.] 353

In a small-animal clinic, TB. was found in 1.2% of the cats and 0.1% of the dogs. Of the allergic tests, the thermo-reaction was found most suitable in the cat and, the intradermal reaction in the dog. The skin lesions are considered in detail, and these the author classifies as (1) necrotic, (2) subcutaneous nodular and (3) ulcerative types.—I. W. JENNINGS.

MYRVIK, O. N. (1956). New tuberculostatic protein isolated from bovine spleen.—*Fed. Proc.* 15, 605-606. 354

A purified homogenous protein from acid aqueous extracts of spleen inhibits H37Rv and B.C.G. strains at 30 µg./ml. and the bovine Ravenel strain at 160 µg./litre. The figures agree with the native resistance of the cow to the strains used.—A. SEAMAN.

BRIEGER, E. M. & GLAUERT, A. M. (1956). Spore-like structures in the tubercle bacillus.—*Nature, Lond.* 178, 544. 355

Electron microscopy of ultra-thin sections of an avian strain growing on solid media revealed the tubular structures described for bacilli. When, at a later stage of growth in slide cultures on thin clots of fowl plasma-chick embryo extract, some of the bacilli had become filamentous, uniform round spore-like bodies with a dense outer layer could be distinguished throughout the filament.—A. SEAMAN.

BARRY, V. C., CONALTY, M. L., DENNENY, J. M. & WINDER, F. (1956). Peroxide formation in bacteriological media.—*Nature, Lond.* 178, 596-597. 356

Peroxide is formed in measurable quantities from citrate, with manganese as a catalyst, at 37°C. (sufficient Mn is present in asparagine and other media constituents). Proskauer & Beck medium contained 1-10 µg./ml. peroxide with a half-life of one month at room temp. It is suggested that peroxide formation is the cause of the poor growth of *Mycobacterium tuberculosis* in synthetic media containing no substances which will destroy peroxide.

—A. SEAMAN.

SZABÓ SZÜCS, J. (1956). Untersuchungen zur Bestimmung der Virulenz und Tuberkulinerzeugungsfähigkeit von Tuberkelbakterienstämmen. [Virulence and suitability for tuberculin production of some *Mycobacterium tuberculosis* strains.]—*Acta vet., hung.* 6, 167-174. [In German. Russian summary.] 357

Of 12 strains tested (9 of human and 3 of bovine origin) the human strains were found more suitable for tuberculin production than the bovine strains, and those with low virulence generally yielded more tuberculin than did the virulent strains. This is explained by the better adaptation of old laboratory strains to the culture media; new and virulent strains tended to acidify the medium, thereby inhibiting production of the specific tuberculin substances.



The use of less virulent strains for tuberculin production also lessens the risk of infection of lab. personnel.—F. K. LEEB.

MEYN, A. & SCHLISSER, T. (1956). Zur Frage der zweckmässigsten Gebrauchskonzentration des Geflügeltuberkulins. [The most suitable concentration of avian tuberculin.]—*Rinder-tuberkulose*. **5**, 157-170. **358**

The optimum concentration of a standard avian tuberculin issued by the Paul-Ehrlich Institute was tested on fowls, 34 with spontaneous and 63 with experimentally induced TB. The most reliable results were obtained with a tuberculin concentration of 25,000 or 12,500 units per ml.—W. G. SILLER.

KWANTES, W. (1956). A projection lamp apparatus for fluorescence microscopy of tubercle bacilli. — *Mon. Bull. Minist. Hlth Lab. Serv.* **15**, 201-204. [Author's summary modified.] **359**

A projection lamp apparatus specially designed for fluorescence microscopy is described. Its advantages over a mercury vapour lamp are mentioned. It has given good service in a public health laboratory, saving a third of the time needed with the Ziehl-Neelsen method.

LAGERCRANTZ, R. (1956). Immunological studies of mycobacteria. I. The ability of various bacteria and fungi to induce production of antibody against erythrocyte-adsorbable antigens from the tubercle bacillus.—*Acta path. microbiol. scand.* **38**, 416-432. [In English.] **360**

83 strains of virulent and avirulent *M. tuberculosis* and other mycobacteria produced antibody response as measured by the Middlebrook-Dubos haemagglutination reaction in g. pigs and rabbits, as did some strains of *Staphylococcus*, *Candida* and *Nocardia*. A transient antibody production induced by anti-catarrhal, typhoid and pertussis vaccines was probably a non-specific reaction following previous contact with mycobacteria.—A. SEAMAN.

PARLETT, R. & YOUNG, G. P. (1956). Antigenic relationships between mycobacteria as determined by agar diffusion precipitin techniques.—*Amer. Rev. Tuberc.* **73**, 637-649. [French and Spanish summaries.] **361**

The 42 strains studied were divided into 4 groups. Each member of Group I had 4 distinct antigens; the group contained 25 human strains, 1 avian, 1 vole and 1 bovine strain. Group II had 2 of the above antigens and contained 7 bovine strains and 1 avian. Group III had 4 antigens, differing from those of I

and II, and was composed of 5 saprophytic strains. Group IV contained a single strain not positively identified as a mycobacterium, which produced 2 antigens unrelated to those of the previous groups.—A. SEAMAN.

HIRCH, A. (1956). The aerobic intestinal flora in Johne's disease.—*J. comp. Path.* **66**, 249-259. **362**

Estimates were made of the total aerobic bacterial content and of the *Bact. coli* count, of the duodenal and ileal contents and of the voided faeces, to determine the relationship, if any, between the bacterial content, and the onset and course of Johne's disease in cattle and goats. *Bact. coli* was present in greater numbers and in higher proportion in the duodenal and ileal contents of infected cattle and goats than in healthy controls. There was no significant difference between the total bacterial count of faeces from infected and healthy cattle, but infected goat faeces had a higher total bacterial count than faeces from healthy goats.—I. W. JENNINGS.

STONE, M. W. (1956). Summer mastitis: further observations.—*Vet. Rec.* **68**, 760. **363**

In a survey by veterinary students, 120 samples of udder secretion were examined. Organisms isolated are given in tabular form; *Corynebacterium pyogenes* was isolated in pure culture from 37% of the samples, and in mixed culture from a further 10%.—T.E.G.R.

I. ŠEBETIĆ, Č., MILANOVIĆ, A. & ĐORDEVIĆ, Ž. (1956). Uporedno ispitivanje vrednosti reakcije vezanja komplementa, KH-reakcije i konglutinacije u dijagnostici sakagije. [Comparative research on serological methods of diagnosis of glanders.]—*Vet. Glasn.* **10**, 255-261. [In Croat. German summary.] **364**

II. ŠEBETIĆ, Č. & MILANOVIĆ, A. (1956). Konzervisanje eritrocita za reakciju vezanja komplementa, KH-reakciju i konglutinaciju kod ispitivanja na sakagiju. [Preservation of erythrocytes for the serological diagnosis of glanders.]—*Ibid.* 341-344. [In Croat. German summary.] **365**

I. A study on diagnosis of glanders in 3,365 blood samples from horses, donkeys and mules, with the aid of complement-fixation, haemagglutination, congulation and conjunctival tests.

II. Sheep r.b.c. stored at temperatures ranging from  $-8^{\circ}$  to  $+4^{\circ}\text{C}$ ., preserved in Bukantz' soln. [sodium citrate 8.0, sodium chloride 4.2, glucose 20.5 ml. per 1,000 ml. distilled water] retained their complement-fixing properties for up to 40 days.—E.G.



BURGISSER, H. (1956). Listériose du mouton en Suisse. [*Listeria infection of sheep in Switzerland.*]—*Schweiz. Arch. Tierheilk.* **98**, 287-290. [In French, English, German and Italian summaries.] 366

An outbreak of *Erysipelothrix (Listeria) monocytogenes* infection in a flock of sheep in Switzerland was controlled by slaughter. The agent was identified by its biochemical properties and by animal inoculation and immunological tests.—M.G.G.

KORNILOVA, A. L. (1956). [Domestic animals as a source of listeria infection.]—*J. Microbiol., Moscow*, **27**, No. 9, pp. 68-73. [In Russian.] 367

In the Novosibirsk region during 1950-55, *E. monocytogenes* was isolated from sheep, lambs, piglets, calves, rabbits, fowls, cats, dogs and aborted bovine fetuses. It was also recorded, for the first time in the U.S.S.R., in geese. Endemics or sporadic cases occurred between December and April. 50 freshly isolated strains and 25 stock cultures were examined: they all fermented within 24 hours laevulose, maltose, salicin, rhamnose and, within 3-5 days, lactose. Workers on infected farms could become infected, not only from clinically sick animals and birds, but also from abortions in apparently healthy animals.—R.M.

GORET, P., COLLET, P., JOUBERT, L. & PILET, C. (1955). Diagnostic expérimental et pathogénie de la pseudo-tuberculose du chat. [Laboratory diagnosis and pathogenesis of pseudo-tuberculosis in cats.]—*Bull. Soc. Sci. vét. Lyon*, **57**, 205-227. 368

Both the complement-fixation and the allergic tests are considered satisfactory; the latter is easier to carry out. Experimental oral infection in the cat was difficult; it was necessary to irritate the intestinal mucosa by the administration of ox bile before giving the virulent culture. Cortisone injections, alone or in combination with virulent cultures, had no effect on the course of infection.—T.E.G.R.

HOFFMAN, A. P. (1956). La queratoconjunctivitis infecciosa de los bovinos. [Infectious keratoconjunctivitis in cattle.]—*Rev. Vet. Milit., B. Aires*, **4**, 99-104 & 106-118. 369

Of 19 calves inoculated by instillation into the eye of *Haemophilus bovis* isolated from acute infectious kerato-conjunctivitis in cattle, 12 developed clinical symptoms, but the infection did not progress to the acute stage. Direct transfer of infective material from the eyes of diseased cattle to healthy calves succeeded in

3 out of 4 cases. Attempts to infect rabbits, g. pigs and sheep were unsuccessful. The organism was isolated from 26 out of 52 acutely affected cattle; failure in half the cases was possibly due to a lapse of more than 48 hours between collection of material and inoculation of the medium. With successive cultures on solid media dissociation occurred. Attempts to infect calves with filtrates were unsuccessful. Rickettsia could not be isolated.—F.E.W.

MONREAL, G. (1956). Ein Beitrag zur Bekämpfung des ansteckenden Geflügelschnupfens. [Control of infectious coryza in fowls.]—*Tierärztl. Umsch.* **11**, 261-263. 370

Good results were obtained in the treatment of even chronic cases of infectious avian coryza by a single i/m injection of 1.5 ml. streptomycin, 1 ml. "streptomycin-supronal" or 1 ml. chloramphenicol. This form of treatment was found to be superior to the administration of antibiotics in food or drinking water, provided that faulty husbandry was corrected.—W. G. SILLER.

KVESITADZE, I. F. (1956). [Bacteriophage against paratyphoid and colibacillosis of calves.]—*Veterinariya, Moscow*, **33**, No. 9, pp. 32-34. [In Russian.] 371

Combining data from various parts of the U.S.S.R., the author stated that the average therapeutic efficacy of bacteriophage in calf paratyphoid was 87.2% and the prophylactic efficacy 93.2%. In *Bact. coli* infection the therapeutic efficacy of bacteriophage was 80.7% and the prophylactic efficacy 86%. He knew of no other preparation which gave results as good as these. Experiments on the administration of paratyphoid phage to 207 pregnant cows on infected farms were reported. Each cow was given 2 doses of 100-150 ml. of a phage preparation a month and 5-7 days before calving. Administration was preceded by dosing with soda soln. [dose not given]. 3% of their calves subsequently became infected with paratyphoid, compared with 43% on the same farm the previous year, and 29% in a control herd.—R.M.

LOCHMANN, E. -H. (1955). Über das Vorkommen der Dyspepsiecoli-Typen O 111:B4 und O 55:B5 in Vorzugsmilch zugleich ein Überblick über das gesamte Coli-Problem. [Occurrence of *Bact. coli* types O 111:B4 and O 55:B5 in milk.]—*Inaug. Diss., Hannover*, pp. 76. 372

Seven strains of *Bact. coli* type O III:B4 and two strains of type O 55:B5 were isolated



from milk samples from a herd, whereas samples from four other herds were free from *Bact. coli*. The *Bact. coli* content of milk appeared to be influenced to a certain extent by environmental temperature. Some strains survived for at least 5 months at temperatures ranging from 2° to -3°C. Details were given of a selective medium containing triphenyl tetrazolium chloride.

—E.G.

KÖSER, A. (1956). Salm. Abortus equi-Infektionen bei Hengsten. [*Salmonella abortus-equi infection in stallions.*]—*Dtsch. tierärztl. Wschr.* 63, 275-280. 373

K. reported the isolation of *S. abortus-equi* from a number of horses slaughtered on account of disease during 1940-44, and gave an account of an outbreak of *S. abortus-equi* infection in a larger number of stallions in 1952. The organism isolated had the antigenic formula 4,12:e, n. Clinical symptoms varied, ranging from high temperature and unilateral oedematous swelling of the scrotum and sheath to involvement of the joints and the respiratory tract. Characteristic lesions were hydrocele, induration of the testicular membranes, epididymitis, inflammation of the vas deferens and atrophy of the affected testicle.

Control measures consisted in hygiene and in 3 injections at intervals of 7-10 days with a formalized vaccine made from the organisms isolated from this outbreak, repeated in 2 successive years.—F. K. LEEB.

TUFFERY, A. A. (1956). The laboratory mouse in Great Britain. V. Intercurrent infection (*Salmonellosis*).—*Vet. Rec.* 68, 568-571. 374

*Salmonella* infections are endemic in about 8 of the largest mouse colonies in Great Britain. In most cases the species have not been identified. Control can be achieved by building up a new colony from healthy mice, provided that adequate hygienic measures are taken.—M.G.G.

SHAMATAVA, V. P. & BAKRADZE, B. M. (1955). [Disappearance of positive reactions to tests for brucellosis in cattle on isolation farms for reactors.]—*Trud. gruzin. nauchno-issled. vet. Inst.* 11, 83-88. [In Russian.] 375

On 3 isolation farms for reactors to the agglutination and complement-fixation tests for brucellosis, the number of positive reactors was reduced by half during the summer, with improvement in feeding and management, and increased again with the coming of winter to approx. the original figures. Apart from this seasonal fluctuation there was a gradual disappearance of reactors over a period of 3 years,

provided that no more infected cattle were added to the herd. [See also *V.B.* 25, 920.]

—R.M.

YUSKOVETS, M. K. & TUZOVA, R. V. (1955). [Preliminary results of specific prophylaxis of brucellosis in female cattle.]—*Izv. Akad. Nauk Byeloruss S.S.R.* No. 1. pp. 37-45. [Abst. from abst. in *Referat. Zh., Ser. Biol.* No. 19. p. 471 (1956).] [In Russian.] 376

Inoculation of 534 cows and heifers (155 of them pregnant) with *Br. abortus* Strain 68 vaccine was stated to have protected 98.1% of them from brucellosis. [Method of exposure to infection not stated in abst. See also *V.B.* 26, 1539.]—R.M.

KÖSER, A. (1956). Die Grenzen der Abortus Bang-Ringprobe bei der Kantenmilchuntersuchung. [Limitations of the *Br. abortus* ring test for the examination of churn milk samples.]—*Dtsch. tierärztl. Wschr.* 63, 354-356. 377

Samples of churn milk, which were positive or doubtful to the ring test, or were negative but came from herds whose milk was positive in the previous year, were subjected to the slow agglutination (S.A.) test. Of the 9,486 negative samples 7.8% were positive to the S.A. test. Of 16,928 samples which reacted strongly to the ring test 11.9% were negative to the S.A. test. K. concluded that the testing of churn milk by the ring test is inadequate for the eradication of *Br. abortus* infection.—M.G.G.

TILGNER, K., DEHNING, R. & NEUMANN, H. -J. (1956). Die Eutergesundheitskontrolle als Grundlage der Abortus-Bang (Brucellose)-Bekämpfung in Schleswig-Holstein. [Udder health as the basis of the campaign against bovine brucellosis in Schleswig-Holstein.]—*Milchwissenschaft.* 11, 243-246 & 273-281. [English, French and Spanish summaries.] 378

The campaign against *Brucella abortus* infection of dairy cattle in Schleswig-Holstein employs the slow serum agglutination test. The milk from individual cows is tested 4 times a year, and the churn milk at longer intervals.

In a comparison of the merits of using individual or churn milk samples for the diagnosis of brucellosis, 1,271 herds containing 9,359 cows were examined by both methods. The two methods gave identical results in 91.3% of cases. Individual samples gave false readings in 1.4% and churn milk in 7.3% of cases.—M.G.G.



GALUZO, I. G. & REMENTSOVA, M. M. (1955). [Reservoirs of animal brucellosis amongst wild animals and birds, in the light of studies of foci of infection.] — *Trud. Inst. Zool., Alma-Ata*, 3, 12-26. [In Russian.] 379

A review of Russian literature, giving tables and a chart of wild mammals, birds, fish (carp), insects and ticks in which spontaneous brucellosis has been recorded on the basis of isolation of the organism or positive serological tests, or which have been shown to be susceptible to experimental infection.—R.M.

ANGELOFF, S. (1956). Versuche zur aktiven Immunisierung der Rinder gegen Brucellose mit Stamm 19 in Bulgarien. [Use of brucella Strain 19 vaccine in Bulgaria.] — *Mh. VetMed*, 11, 361-363. 330

A report on the successful use of *Br. abortus* Strain 19 vaccine in the control of an outbreak of brucellosis on a state-controlled farm. Calves were given an injection of 5 ml., cows 6 ml., of a vaccine containing ten thousand million organisms per ml. Intradermal injection, into the vulva, of a suspension of 50 thousand million organisms in 0.5 ml. diluent was also adopted and is believed to be more convenient and to produce a better and more rapid immunity.

—F. K. LEEB.

IVANOVA, V. I. (1956). [Use of dried brucella vaccine from Strain 19.] — *Veterinariya, Moscow*, 33, No. 9, pp. 34-36. [In Russian.] 381

The author discussed the vaccination of sheep in the Stravropol region with Strain 19 vaccine. [See also *V.B.* 27, 48-51.]—R.M.

DIERNHOFER, K. (1956). Eine neue allergische Hautprobe bei der Brucellose. [An allergic skin test for brucellosis.] — *Wien. tierärztl. Mschr.* 43, 193-199. [English, French and Italian summaries.] 382

By prolonged boiling of brucella antigen in the presence of acetic acid and subsequent precipitation of the polypeptides and lipids, D. obtained a polysaccharide which was a suitable hapten for allergic tests. It was non-agglutino-genic and caused no interference with the serological tests. Experiments indicated that this polysaccharide, if combined with a suitable medium, may be suitable for immunization without increasing the agglutination titre. Positive allergic reactions, obtained by i/d injection of a 3% solution of this material, in a dosage of 0.1 ml. (equal to 3 mg. polysaccharide), were identical with those of the tuberculin test.

—F. K. LEEB.

SCHOOP, G. & ZETTL, K. (1956). Vergleich der verschiedenen Methoden zur Ermittlung brucelleninfizierter Schafe. [Comparison of methods of diagnosing brucellosis in sheep.] — *Dtsch. tierärztl. Wschr.* 63, 356-359. 383

Of 17,189 sheep, 81% were positive to the agglutination test, 51% to the complement-fixation test and 51% to the allergic reaction. Only 25% were positive to all three tests.—M.G.G.

VERSHILOVA, P. A. (1956). [Immunization of sheep against brucellosis with a live vaccine.] — *Proc. Lenin Acad. agric. Sci.* 21, No. 6, pp. 36-39. [In Russian.] 384

A discussion, from the medical point of view, of the theoretical basis of immunizing sheep with live brucella vaccine.—R.M.

JONES, L. M. & ALTON, G. G. (1956). Comparison of the immunity produced in guinea-pigs by the inoculation of killed "rough" and "smooth" cultures of *Brucella melitensis* in adjuvants. — *Vet. Rec.* 68, 784-786 & 787. [Authors' summary copied verbatim.] 385

An adjuvant vaccine prepared from a rough culture of *Br. melitensis* produced the same degree of immunity in guinea-pigs as a similar vaccine prepared from a typical smooth strain. Agglutinins to smooth antigen were not produced by the rough vaccine.

FRITZSCHE, K. (1956). Die Hasenbrucellose in Rheinland-Pfalz. [Brucellosis in wild hares in Rhineland-Palatinate.] — *Berl. Münch. tierärztl. Wschr.* 69, 301-307. [English summary.] 386

F. reported a small outbreak of brucellosis in wild hares which was shown to be epidemiologically connected with brucellosis of pigs, and possibly also with brucellosis of sheep. The lesions consisted of necrotizing inflammation of the spleen and the testicles, and of metritis in females. The strains isolated were identified as the Danish variant of *Br. suis*. Natural infection of sheep with brucella strains from wild hares was shown to be possible, and produced positive titres after 17-23 days, but their pathogenicity in sheep was low.—F. K. LEEB.

NIŽNÁNSKY, F. & KRČMÉRY, V. (1956). Príspevok k ureázovej a katalázovej aktivite brucelových kmeňov. [Urease and catalase activity of brucella strains.] — *Vet. Čas.* 5, 182-193. [In Slovak. German and Russian summaries.] 387

An account of determination of catalase and urease activity in 27 strains of *Brucella abortus*, 33 strains of *Br. suis* and 8 of *Br. melitensis*. The value of these for the differentiation



between *Br. abortus* and *Br. suis* and the relationship between urease and catalase activity and pathogenicity of strains was discussed.

—E.G.

TERESHCHENKO, M. P., ESADZHANYAN, M. M., MIROSHNICHENKO, M. A., VARTANYAN, A. A. & OVSANYAN, O. V. (1956). [Epidemiological importance of sheep in tularaemia.] — *J. Microbiol., Moscow*, **27**, No. 9. pp. 34-36. [In Russian.] **388**

Tularaemia occurred amongst workers at an abattoir. The causal organism was isolated from the organs of slaughtered sheep and from *Haemaphysalis otophila* parasitic on the sheep. It could not be isolated from carcasses which had been slaughtered for 24 hours or longer.

—R.M.

CRANE, C. S. (1956). A report on leptospirosis in a herd of Shetland ponies.—*J. Amer. vet. med. Ass.* **129**, 260-262. **389**

A diagnosis of leptospirosis among 25 Shetland pony mares was based on a history of abortions and neonatal mortality over a period of two years, and on P.M. findings which were similar to those in calves affected with the disease.—T.E.G.R.

FENNESTAD, K. L. & BORG-PETERSEN, C. (1956). Studies on bovine leptospirosis and abortion. II. Experimental leptospirosis in pregnant heifers.—*Nord. VetMed.* **8**, 815-833. [In English. German and Danish summaries. Authors' summary modified.] **390**

The response of 20 heifers to *Leptospira icterohaemorrhagiae*, *L. poi*, *L. pomona*, *L. sejroe* and *L. saxkoebing* infection in the last few months of pregnancy was studied. Fever or other clinical symptoms, usually beginning 4-6 days after inoculation, were observed in 16 heifers. Two of these animals aborted 23 and 28 days after inoculation with *L. icterohaemorrhagiae* and *L. poi*, while the remaining heifers gave birth to normal calves. No leptospira were found in the urine of the heifers or in the kidneys of 6 animals slaughtered 45-95 days after inoculation.

Interstitial lymphocytic nephritis was present in all 6 slaughtered animals and gross renal lesions were seen in 4. *Leptospira* agglutinin-lysins were not evident in the aborted foetuses and leptospira could not be demonstrated in any foetal material. However, the foetuses had lesions indicative of leptospirosis.

The agglutinin-lysin titre curves of the heifers showed great individual variation. Ana-

logous variations were found in the whey of the dams and in the serum of the calves after suckling.

BEZDENEZHNUIKH, I. S. & KASHANOVA, N. I. (1956). [Bovine leptospirosis on Sakhalin Island.]—*J. Microbiol., Moscow*, **27**, No. 9. pp. 60-63. [In Russian.] **391**

Agglutination tests were performed on sera from 1,253 apparently healthy cattle. 19% reacted to *L. canicola* antigen at titres of from 1:400 to 1:100,000. There were only a few reactions to *L. icterohaemorrhagiae* antigens and none to antigens of strains causing non-icteric infection. Bacteriological examination of blood from 68 calves on infected farms and of 11 kidneys and 7 urine samples from adult cows, led to the isolation of *L. grippo-typhosa* and *L. hebdomadis* from 2 of the calves. The source of infection for cattle was believed to be water contaminated by infected dogs and rats.

—R.M.

GORSHANOVA, E. N. (1956). [Epidemiology of non-icteric leptospirosis in Dagestan.]—*J. Microbiol., Moscow*, **27**, No. 9. pp. 51-54. [In Russian.] **392**

Non-icteric leptospirosis in human beings in Dagestan occurred in the autumn-winter season during 1948-54. Outbreaks were associated with the return of cattle, sheep and goats from summer pastures. G. recommended veterinary examination of these animals before and after summer pasturing, to detect carriers.—R.M.

COMBIESCU, D., STURDZA, N., ȘEFER, M., RADU, I., DIMA, G. & COHN, I. (1956). Rolul animalelor în transmiterea leptospirozelor din țara noastră. [Role of animals in the transmission of leptospirosis in Roumania.]—*Comunic. Acad. Repub. pop. Romine*, **6**, 705-708. [In Roumanian. French and Russian summaries.] **393**

The majority of human infections (76%) were caused by *Leptospira* "Strain 396". The same species was isolated from 10% of all rats examined, but from only a small proportion of pigs, sheep and cattle. A serological survey of slaughtered animals revealed leptospira antibodies (all species) in 14 out of 100 pigs, 3 out of 110 cattle and 2 out of 91 sheep. It was concluded that farm animals were not an important reservoir of human leptospirosis.—R.M.

STOENNER, H. G., CREWS, F. W., CROUSE, A. E., TASCHNER, L. E., JOHNSON, C. E. & WOHLER, J., JR. (1956). The epizootiology of bovine leptospirosis in Washington.—*J. Amer. vet. med. Ass.* **129**, 251-259. **394**



In a survey during the year ending March, 1954, sera from 34,718 cattle in 3,324 herds (of which 203 were known to have been infected) were examined. Of these 4,015 were positive for *Leptospira pomona*. Common sources of infection were contaminated pastures, streams and ponds; introduction of infected animals into clean herds; close confinement in muddy corrals apparently favoured the spread of the disease. Abortion during the last 3 months of pregnancy occurred in most infected herds. Control measures recommended include restriction of movement of infected stock and the prevention of contamination of natural streams.

—T.E.G.R.

RINGEN, L. M. & BRACKEN, F. K. (1956). **Studies on bovine leptospirosis. II. The effect of various levels of tetracycline hydrochloride on bovine leptospirosis.**—*J. Amer. vet. med. Ass.* **129**, 266-268. 395

Various routes of experimental infection were tried, viz., the conjunctival sac, the nostril and the shaved skin of the foot. In the last mentioned case the foot was held in a bucket of diluted infected urine for 1½-2 min. Relatively small numbers of organisms were required for the other routes. In about half of the animals repeated treatment was necessary. Tetracycline hydrochloride was administered daily for 5 days. Doses of 1 or 2 mg./lb. body wt. were ineffective but, when the dose was 4 or 5 mg. the organism disappeared from the urine.

—T.E.G.R.

TEIGLAND, M. B. (1956). **An experience with a *Leptospira pomona* bacterin in dairy cattle.**—*J. Amer. vet. med. Ass.* **129**, 259-260. 396

Leptospirosis was suspected on clinical grounds and confirmed serologically in a herd of 650 cows of which 10% of the pregnant animals had aborted. All the animals were vaccinated with a killed culture vaccine and re-vaccinated after 6 months. No further abortions occurred. It is pointed out by a reviewer in the same journal that the drop in the abortion rate is not necessarily a direct result of vaccination as it is possible that the infection was dying out when the vaccine was administered.

—T.E.G.R.

SAFAROV, K. M. (1955). **[Use of a quinosol vaccine without serum for the inoculation of cattle, sheep and goats against leptospirosis.]**—*Trud. Azerbaidzhan. sel'skokhoz. Inst.* **3**, 105-108. [In Russian.] [Abst. from abst. in *Referat. Zh.*, Ser. Biol. No. 17, p. 467. (1956).] 397

A quinosol leptospira vaccine was stated to

have been used with good results in 10,000 cattle and 50,000 sheep and goats exposed to the risk of natural infection. Leptospira immune serum was not given.—R.M.

FERGUSON, L. C., LOCOCO, S., SMITH, H. R. & HAMDY, A. H. (1956). **The control and treatment of swine leptospirosis during a naturally occurring outbreak.**—*J. Amer. vet. med. Ass.* **129**, 263-265. 398

*L. pomona* infection was diagnosed serologically, and confirmed by cultural methods, in a group of 29 gilts. A reduction in the rate of abortion and neonatal mortality followed chlortetracycline therapy, although infection was not completely eradicated. It is considered possible that the spread of infection was checked by the use of leptospira killed culture vaccine. It is recommended that newly purchased animals should be serologically tested and isolated for 14 days before being admitted to the main herd.—T.E.G.R.

HOWARTH, J. A. (1956). **Effect of aureomycin and polyotic in an outbreak of leptospirosis of swine.**—*J. Amer. vet. med. Ass.* **129**, 268-271. [Abst. from author's summary.] 399

From results of experiments it is concluded that tetracycline and aureomycin are effective in the control of *L. pomona* in pigs.

KRAMINSKAYA, N. N. & EXIN, V. A. (1956). **[Spontaneous leptospirosis in white mice.]**—*J. Microbiol., Moscow*, **27**, No. 9, pp. 63-64. [In Russian.] 400

Leptospirosis, frequently in a subclinical form, was observed in 4 breeding establishments for lab. mice in the Far Eastern zone of the U.S.S.R. In one of them 60% had positive blood titres. The strain responsible was apparently a new serological type, named *L. muris* by the authors.—R.M.

WILLIAMS, H. R., MURPHY, W. J., MCCROAN, J. E., STARR, L. E. & WARD, M. K. (1956). **An epidemic of canicola fever in man with the demonstration of *Leptospira canicola* infection in dogs, swine and cattle. I. Clinical and epidemiological studies.**—*Amer. J. Hyg.* **64**, 46-58. 401

WARD, M. K., MCDANIEL, M. B., TATUM, H. W., STARR, L. E. & WILLIAMS, H. R. (1956). **An epidemic of canicola fever in man with the demonstration of *Leptospira canicola* infection in dogs, swine and cattle. II. Laboratory studies.**—*Ibid.* 59-69. 402

I. An account of *L. canicola* infection in 26 out of 55 people who had bathed in a stagnant pool in the bed of a stream.



II. Serological evidence of *L. canicola* infection was found in dogs, pigs and cattle that had access to the stream. The agent was isolated from hamsters inoculated with the urine of 3 dogs and a suspension of a sow's kidney.

—M.G.G.

GRINER, L. A., AICHELMAN, W. W. & BROWN, G. D. (1956). *Clostridium perfringens* type D (epsilon) enterotoxemia in Brown Swiss dairy calves.—*J. Amer. vet. med. Ass.* **129**, 375-376. 403

Three calves, 7-10 weeks old, died with a clinical picture similar to that in lambs with enterotoxaemia. *Cl. welchii* toxin, Type D, was demonstrated in the intestinal contents by neutralization tests in mice and by culture.

—M.G.G.

MAY, A. J. & WHALER, B. C. (1956). The absorption of *Clostridium botulinum* toxin from the alimentary canal.—*J. Physiol.* **132**, 64P-65P. of Proceedings. 404

Rabbits in which the cervical thoracic lymph duct, and rats in which the intestinal lymphatic duct was cannulated, were given multiple lethal doses of *Cl. botulinum* Type A toxin into the small intestine. It was shown that the lymph samples contained lethal doses of toxin, and at a higher titre than that of the blood. It would appear that the protein toxin is absorbed primarily into the lymph stream before it reaches the blood.—W. E. PARISH.

PRÖGER, K. (1956). Beitrag zur Epidemiologie der Vibriosis bei Rindern in Thüringen. [Epidemiology of *Vibrio fetus* infection in cattle in Thuringia.]—*Mh. VetMed.* **11**, 197-202 & 224-226. 405

P. made a statistical survey of 644 herds of cattle to assess the importance of *V. fetus* infection in bulls in causing abortion and infertility in cows. *V. fetus* was isolated from preputial washings and the seminal fluid of young bulls not yet used for breeding, and also of older bulls used with excellent results for both service and artificial insemination. This suggested the presence in bulls of non-pathogenic strains of *V. fetus* which may not always cause genital infection and abortion in cows. Conditions of management, hygiene and nutrition of cattle in all these districts were very poor—this being related to the high incidence of infertility.

—F. K. LEEB.

HUBRIG, T. (1956). Zur bakteriologischen Diagnostik von *Vibrio fetus*. [Bacteriological diagnosis of *Vibrio fetus* infection.]—*Mh. VetMed.* **11**, 271-276. 406

H. described the cultural characters of 57 strains of *V. fetus* from foetuses, preputial washings and bull semen. Liver broth with 0.1% agar was a particularly good medium in which typical growth zones were formed; 15% horse blood agar without glucose was used as solid medium. All the strains were identified as *V. fetus* but a subdivision was possible into catalase-positive strains, which included those isolated from foetuses, and catalase-negative strains, from preputial washings and bull semen. No definite conclusions could, however, be drawn regarding a possible difference in the pathogenicity of these two groups.

—F. K. LEEB.

KUZDAS, C. D. & MORSE, E. V. (1956). Physiological characteristics differentiating *Vibrio fetus* and other vibrios.—*Amer. J. vet. Res.* **17**, 331-336. 407

The physiological characteristics of 66 cultures of vibrio isolated from cattle, sheep, pigs, man, soil, cheese and water were examined. Most of the strains produced catalase with the exception of those isolated from cattle but not incriminated as causing abortion or infertility. These cultures also produced hydrogen sulphide. *V. fetus* was catalase positive, hydrogen sulphide negative, and grew at a minimum temp. of 15°C. The hydrogen sulphide positive, catalase negative organisms were cultivable from 20°C. Cultures of *V. fetus* on primary isolation from cattle did not survive in the presence of 3.5% sodium chloride whilst related *Vibrio* species grew well.—A. E. PIERCE.

MUNDT, W. (1956). Das differentialdiagnostische Problem von Vibrionen und Spirillen (*Vibrio foetus*, *Vibrio jejuni* und *Spirillum suis*). [Problem of the differential diagnosis of *Vibrio fetus*, *V. jejuni* and *Spirillum suis* infection.]—*Prakt. Tierarzt.* No. 7. 190-194. 408

M. studied the biochemical, serological and cultural properties of 76 strains of *V. fetus*, derived from foetuses (10), the genital organs of bulls (17) and cows (49), and of 56 strains of *V. jejuni* from the intestine of infected cows and 30 strains of *Sp. suis*.

All the strains from foetuses, but only 9 of the 17 from bulls, were pathogenic strains of *V. fetus*. Of the 49 strains from the genital organs of cows all except 3 were pathogenic. All the pathogenic strains produced catalase but no hydrogen sulphide. Ten of the non-pathogenic strains of *V. fetus* which were catalase negative, but H<sub>2</sub>S-positive, were shown to be *V. jejuni*. Serological differentiation between *V. fetus* and



*V. jejuni* was possible with specific antisera prepared in rabbits. Positive titres of up to 1:400 were obtained with the homologous antigen and with pathogenic strains of *V. fetus*, but not with *V. jejuni* and *Sp. suis*. *V. jejuni* differed from *Sp. suis* in pigmentation on solid culture media and in the arrangement of the flagella.—F. K. LEEB.

ROBERTS, D. S. (1956). **Studies on vibronic dysentery of swine.**—*Aust. vet. J.* **32**, 114-118. **409**

The cultural characteristics of the causative vibrio of swine dysentery are considered in some detail. All attempts to detect homologous antibody in the sera of convalescent pigs failed. The principal pathological change was an acute inflammation of the large intestine.

—R. D. BARRY.

SAUNIE, L., BELLOCQ, B., BARRAIRON, P. & GERVAIS, F. (1956). Contribution à l'étude de la botryomycose du cheval au Maroc. [**Botryomycosis in horses.**]—*Rev. Cps vét. Armée.* **11**, 49-50. **410**

A staphylococcus isolated from the nictitating membrane of a horse with botryomycosis of the eye was highly susceptible to chloramphenicol *in vitro*, less so to streptomycin and terramycin, only moderately so to aureomycin, but not at all susceptible to penicillin. The horse was cured within a month after daily i/m injection of 3 g. of streptomycin for 10 days and local application of an antibiotic complex with a base of streptomycin.—M.G.G.

AVRAM, A. & ALTERAS, I. (1956). Contributii la cunoasterea dermatomicozelor animale din țara noastră. [**Dermatomycoses of animals in Roumania.**]—*Comunic. Acad. Repub. pop. Romine.* **6**, 595-603. [In Roumanian, French and Russian summaries.] **411**

The authors found *Trichophyton faviforme*-*album* infection in cattle and horses, *Microsporum lanosum* infection and cats and dogs, and *Achorion quinckeanum* infection in cats and mice. They discussed human infection from these sources.—R.M.

VRTIAK, J. & ZAPLETAL, J. (1956). *Trichophyton faviforme discoides*. Pôvodca oparu lysivého u hovädzieho dobytku. [*Trichophyton faviforme discoides* [*Trichophyton verrucosum* var. *discoides*] infection in cattle.]—*Vet. Čas.* **5**, 204-228. [In Slovak, German and Russian summaries.] **412**

*T. verrucosum* var. *discoides* was isolated from cattle with ringworm on 21 farms in Slovakia. Incidence was highest in young animals.

Infective material was washed in a 1-2% soln. of formalin, penicillin, streptomycin and saline and then grown on Sabouraud's medium. Tap water and chemically impure carbohydrates in the medium resulted in more prolific growth of the fungus. When grown on grains of barley and other cereals, micro- and macroconidia were produced. Transferred to conventional media the fungus grew prolifically. Details are given of cultivation in chick embryos, egg shell membranes, carrots, potatoes and faeces.—E.G.

SZAFIARSKI, J. & NAWROCKI, J. (1956). Liszaj strzygący u owiec. [**Dermatomycosis in sheep caused by *Trichophyton* and *Microsporum*.**]—*Méd. vét., Varsovie.* **12**, 472-474. [In Polish.] **413**

An account of morphology and cultural characteristics of the fungi and description of lesions in domestic animals. Ringworm occurred in the squamous form in horses and cattle; the vesicular form in pigs, dogs, calves and lambs; the crusted form in cattle and sheep and a deep-seated form mainly in dogs. The authors discussed various treatments.—M. GITTER.

KAPLAN, W., GEORG, L. K. & FOSNAUGH, C. J. (1956). **Isolation of the dermatophyte, *Microsporum gypseum*, from a horse with ringworm.**—*J. Amer. vet. med. Ass.* **129**, 381-383. **414**

A fungus causing patches of alopecia on the back, rump, shoulders and in the mane of a horse was isolated in a selective medium and identified grossly and microscopically as *M. gypseum*. Seven other horses in the same field had no skin abnormalities. This is the first report of this infection in a horse in the U.S.A.—M.G.G.

PILCHER, K. S. & HAMILTON, A. Y. (1956). **Antifungal activity of a new group of salicylamide derivatives for dermatophytes. II. The relation of chemical structure to activity.**—*Antibiot. & Chemother.* **6**, 573-584. [Spanish summary: p. 619. Abst. from authors' summary.] **415**

A new group of 33 salicylamide derivatives was tested for fungistatic activity against *Trichophyton mentagrophytes* and *Microsporum audouinii*. The activity of all compounds was reduced in the presence of plasma proteins. *N*-Phenyl-3-phenyl salicylamide was completely inactivated. *N*-(4-Hydroxyphenyl)-3-phenyl salicylamide and *N*-butyl-3-phenyl salicylamide appeared to be the best fungistatic agents of the group for the dermatophytes tested



MOULTON, J. E., BOIDIN, A. G. & RHODE, E. A. (1956). A pathogenic pleuropneumonia-like organism from a calf. — *J. Amer. vet. med. Ass.* **129**, 364-367. [Authors' summary modified.] **416**

A pleuropneumonia-like organism was recovered from the joints, kidneys, and spleen of a calf with severe arthritis and bronchopneumonia. Treatment with penicillin and streptomycin had been unsuccessful. It was not an "L" form of bacterium as demonstrated by subculture on non-inhibitory medium.

Biochemically, this organism seemed to be related to the organisms of caprine and bovine contagious pleuropneumonia, except that it fermented galactose. Experimental inoculation into young cattle caused stiffness, lameness, and keratitis. Two inoculated lambs developed keratitis. Agglutinins were demonstrated in the sera of these animals. Pigs and mice were unaffected. It was possible to passage the organism through embryonating eggs.

DEVOLT, H. M. & GABUTEN, A. R. (1956). Studies with high level concentrations of tetracycline antibiotics against aerosaccitis artificially induced in turkeys with the infectious sinusitis agent (PPLO).—*Poult. Sci.*

**35**, 1079-1083. [Authors' conclusions modified.] **417**

One part tetracycline to 630 parts mash prevented inflammation of the air sacs in poult inoculated intratracheally with pleuropneumonia-like organisms. Oxytetracycline had a similar effect in a group of 12 poults. The action of tetracycline was roughly proportional to the concentration used.

GDOVIN, T., HRUDKA, F. & KOPPEL, Z. (1956). Infekčná epididymitída baranov na strednom Slovensku. II. Žpráva k jej symptomatológii, histológii a etiológii. [Infectious epididymitis in rams in Slovakia. II. Symptoms, histology and aetiology.]—*Vet. Čas.* **5**, 161-181. [In Slovak. German and Russian summaries.] **418**

Histologically the condition resembled that described by Buddle & Boyes [*V.B.* **23**, 3293]. A brucella-like organism was isolated from infected animals and details were given of spontaneous cases in rams and experimental infection in adult male sheep, goats and rabbits but infection of immature rams, goats and boars was unsuccessful. Mode of natural transmission and epidemiology have, so far, not been established. [See also *V.B.* **26**, 1575.]—E.G.

## DISEASES CAUSED BY PROTOZOAN PARASITES

GEORGESCU, L., MEDREA, N. & BRĂTESCU, A. (1956). Cercetări asupra puterii sterilizante a antrycidului în tripanosomiiza experimentală la cini și șobolani. [Sterilizing action of antrycide in experimental tripanosomiasis of dogs and rats.] — *Annu. Inst. Pat. Igiene. anim.* **6**, pp. 251-259. [In Roumanian. Abst. from French summary. p. 299.] **419**

In rats and dogs infected with *Trypanosoma equiperdum* and treated with 0.5 ml. antrycide "pro-salt" [quinapyramine (prophylactic)] per kg. body wt., the blood was cleared of trypanosomes for 60 days after treatment; after this the action of the drug gradually decreased and disappeared after 4 months. In animals treated with antrycide methyl sulphate, 5 ml. per kg., the destruction of trypanosomes was slower and was not complete until 24 hours after treatment.—F.E.W.

YOO, A. E. J., NASH, J. B. & EMERSON, G. A. (1956). Cure of *Trypanosoma equiperdum* infection in mice with Netropsin and with blood fractions.—*Fed. Proc.* **15**, 503. **420**

Mice infected with *T. equiperdum* were permanently cured with netropsin [*V.B.* **23**,

**2823**] sulphate, or the blood or blood fractions from different species of animals. A permanent cure was not obtained with arsenicals, and of 80 other agents tested none was as effective as netropsin sulphate.—A. E. PIERCE.

EDWARDS, E. E., JUDD, J. M. & SQUIRE, F. A. (1956). Observations on trypanosomiasis in domestic animals in West Africa. I. The daily index of infection and the weekly haematological values in goats and sheep infected with *Trypanosoma vivax*, *T. congolense* and *T. brucei*. II. The effect on the erythrocyte sedimentation rate, plasma protein, bilirubin, blood sugar, red-cell osmotic fragility, body weight and temperature in goats and sheep infected with *Trypanosoma vivax*, *T. congolense* and *T. brucei*. — *Ann. trop. Med. Parasit.* **50**, 223-241 & 242-251. [Authors' summaries modified.] **421**

I. An account is given of the responses observed in the Gold Coast of goats and sheep infected with *T. vivax*, *T. congolense* and *T. brucei*. It was possible to classify the responses into the 4 categories of acute, subacute, chronic and cryptic. (1) In the acute reaction the index



of infection remained high throughout, there was a rapid drop in the erythrocyte count, and the animals died within a few weeks. (2) In the subacute form, the degree of trypanosome invasion of the peripheral blood remained moderately high, with appreciable fluctuations from day to day. The early and sudden decline in erythrocyte values was followed by a brief period of recovery, which soon gave way to another fall and to the death of the animal within 3-5 months. (3) In the chronic response, the degree of infection in the initial stages was in general comparable to that in the subacute form, but later it gradually declined until it ultimately reached an incidence so low that trypanosomes were only occasionally found in blood samples. The erythrocyte values, after an initial fall, showed a varying degree of recovery but seldom regained normal levels. (4) In the cryptic type, no trypanosomes were demonstrable in the peripheral blood-stream, but the erythrocyte values declined rapidly and death occurred within a few weeks.

II. The findings, irrespective of the species of trypanosome, were as follows.

The erythrocyte sedimentation rate remained normal in goats, but was greatly increased in sheep after inoculation with *T. brucei*. The blood plasma showed no changes in total protein content which could be related to the presence of the parasite. The plasma-bilirubin level remained unchanged. The blood-sugar level showed no significant alteration, except in two cases in which appreciable increases occurred shortly before death. The red-cell osmotic fragility showed no increase at any stage of the disease in goats. Except where death ensued at an early stage, the total body weight was, in most animals, reduced by some 30%. In goats the rectal temperature varied from about 101° to 105°F., but no definite evidence was obtained that peaks in the temperature were associated with the appearance of large numbers of trypanosomes in the blood. Electrophoresis of the serum showed substantial increases in gamma-globulin in most animals. Histological examination revealed significant pathological changes, particularly in the liver and lungs.

DIAMOND, L. S. & RUBIN, R. (1956). Susceptibility of domestic animals to infection with *Trypanosoma cruzi* from the raccoon.—*J. Parasit.* 42, No. 4.—Sect. 2. (Suppl.) p. 21. 422

A strain of *T. cruzi*, recently isolated from raccoons, proved infective for pigs, sheep and goats, though none showed signs of disease. In

sheep and goats a low grade, short term parasitaemia appeared during the second week and persisted for some days. A latent infection persisted for at least a month in goats and for 8 weeks in sheep. In pigs a parasitaemia was not observed but a latent infection persisted for at least 8 weeks.—S. BRIAN KENDALL.

DE MELLO, M. R. (1954). Dados sobre a incidência da tricomonose bovina em alguns Estados do Brasil. [*Incidence of bovine trichomoniasis in some States of Brazil.*]—*Bol. Insem. art.* 6, Nos. 2 & 3. pp. 16-23. [English and French summaries.] 423

Of 341 cattle examined, 9% were shown to be infected. The geographical incidence of positive cases is indicated.—I. W. JENNINGS.

VARADIN, M. (1956). Some observations on the course and prevention of trichomonad infection.—*Proc. IIIrd Int. Congr. Anim. Reprod.* Cambridge, 1956. Sect. II. pp. 34-36. [French summary.] 424

Relatively few organisms are transmitted at mating. These are at first localized in the mucous membrane of the lower commissure of the vulva and of the vestibule of the vagina from whence infection spreads. Invasion is favoured by a neutral or slightly alkaline reaction. The rate of movement of the organism is slow compared with that of spermatozoa and the effects of infection, namely endometritis, pyometra or abortion, depend on the rate of invasion of the uterus. It is considered that lavage and the application of an antiseptic ointment 3 hours after mating will prevent infection without interfering with conception.—T.E.G.R.

HAMMOND, D. M. & LEIDL, W. (1956). Experimental infections of the genital tract of swine and goats with *Trichomonas foetus* and *T. species* from the cecum of swine.—*J. Parasit.* 42, No. 4.—Sect. 2. (Suppl.) p. 22. 425

The genital tract of the sow was less susceptible to inoculation with *Tr. foetus* than with a trichomonad from the caecum of a pig. Neither species of *Trichomonas* infected the preputial cavity of a boar. *Tr. foetus* was able to become established in the genital tract of the female goat but not in the preputial cavity of the male. —S. BRIAN KENDALL.

STABLER, R. M. (1956). Furazolidone as a therapeutic agent in pigeon trichomoniasis.—*J. Parasit.* 42, No. 4.—Sect. 2. (Suppl.) p. 23. 426

10 mg. furazolidone [*V.B.* 24, 2639] for 7 days reduced the mortality in pigeons caused by a virulent strain of *Trichomonas gallinae*. The



drug was, however, too toxic for use at effective therapeutic levels: 35 mg. per bird for 7 days proved highly toxic.—S. BRIAN KENDALL.

LUND, E. E. (1956). Oral transmission of *Histomonas* in turkeys.—*Poult. Sci.* 35, 900-904. 427

Experimental observations indicated that oral transmission of the histomonads, in the absence of caecal worms, is not in itself an important means of infection, even under the most favourable conditions. A bird harbouring caecal worms, but not having histomonads, can, it is suggested, become infected orally and then void heterakis ova conveying *Histomonas*.

—S. BRIAN KENDALL.

WHITTEN, L. K. (1956). Further field experiments on the use of coccidiostatic drugs in unweaned lambs.—*N.Z. vet. J.* 4, 25-26. 428

Under field conditions, lambs believed to be suffering from clinical coccidiosis showed no growth response to the following treatments:—(1) sodium sulphadimidine, 2 g. on the first day, followed by 1 g. daily for the next 2 days; (2) mepacrine, 0.1 g. daily for 3 days; (3) sulphanilamide, sulphaguanidine or triple sulphonamide association ("Trinamide") at the rate of an initial 2.0 g., followed by 1 g. daily for the next 2 days; (4) diiodohydroxyquinoline at 0.6 g. daily for 3 days; (5) sulphaquinoxaline, 0.7 g. daily for 3 days; (6) a single dose of 4 g. sulphadimidine or of 15 g. phenothiazine. The mean initial weight of the lambs varied between 38 and 58 lb.—S. BRIAN KENDALL.

PAICHUK, N. G. (1955). [Study of the dynamics of infection of pigs with coccidia in Kazakhstan.]—*Trud. Inst. Zool., Alma-Ata.* 3, 151-160. [In Russian.] 429

The youngest age at which oocysts were observed in the faeces was 6 days, and the youngest age at which 100% of piglets were infected was 40 days. In all age groups, infection ranged from 35% of the herd in January to 100% in May and June. *Isospora suis* was encountered only in young pigs, but infection with *Eimeria deblickei*, *E. scabra* or *I. alma-tensis* was not related to the age of the pig.

—R.M.

TSUIGANKOV, A. A. (1955). [Incidence and mode of infection of coccidia in camels.]—*Trud. Inst. Zool., Alma-Ata.* 3, 140-150. [In Russian.] 430

T. studied the incidence of coccidiosis in 80 camels in the Alma-Ata region, in relation to season, age of the animal and species of coccidia. The extent of infection ranged from

75-100% of young camels and 4-64% of adults. *Isospora orlovi* was observed only in young camels, aged 15-30 days. Older animals were infected with *Eimeria cameli*, or more rarely *E. kazachstanica*.—R.M.

DORSMAN, W. (1956). De enting van kuikens tegen coccidiose. [Immunization of chicks against coccidiosis.]—*Tijdschr. Diergeneesk.* 81, 783-790. [In Dutch. English summary.] 431

D. concluded that the use of a proprietary American "vaccine", containing the infective oocysts of 4 species of *Eimeria*, was inadvisable.

—R.M.

BERG, L. R., HAMILTON, C. M. & BEARSE, G. E. (1956). The effect of furazolidone and other drugs on the growth of chicks raised on old litter containing coccidia.—*Poult. Sci.* 35, 876-884. 432

Nitrofurazone, sulphaquinoxaline, nitrophenide and furazolidone were added to the food used in rearing table poultry to 11 weeks of age on old built-up litter. As long as the chicks were started on old litter there was no clinical coccidiosis whether drugs were used or not. If, however, new litter was used clinical disease might occur both in the presence and the absence of coccidiostatic drugs. Different growth responses (presumably unrelated to the clinical effects of coccidiosis) were observed with different treatments. In particular, furazolidone at concentrations of 55 or 110 p.p.m. of the food promoted increased growth.

—S. BRIAN KENDALL.

HARMS, R. H. & TUGWELL, R. L. (1956). The effect of experimentally induced prolonged blood clotting time on cecal coccidiosis of chicks.—*Poult. Sci.* 35, 937-938. 433

As the result of laboratory experiments the authors concluded that the addition of 1 g. of menaphthone ("menadione") per ton of chick food caused a reduction in the rate of mortality from caecal coccidiosis caused by *Eimeria tenella*. The effect was apparent in the presence or absence of dicoumarol as long as the medicated food was fed as the basal ration. By contrast, the addition of 20 g. of menaphthone per ton of food at the time of infection with *E. tenella* had no effect. In chicks fed a diet containing dicoumarol at the rate of 1 g. per lb. of feed there was a significant increase in the rate of mortality from caecal coccidiosis. [The effect of menaphthone was assessed on the observation that no birds (out of 44) died in the treated group whereas 3 (out of 44) died in the



untreated group. The significance of this result is stated to have been tested statistically.]

—S. BRIAN KENDALL.

RUBIN, R., McLOUGHLIN, D. K., COSTELLO, L. C. & WEHR, E. E. (1956). The efficacy of nicarbazin as a prophylactic drug in cecal coccidiosis of chickens.—*Poult. Sci.* **35**, 856-860. 434

Under experimental conditions 0.00625% or 0.0125% nicarbazin [*V.B.* **26**, 1589] in the food protected young chicks against an inoculum of the oocysts of *Eimeria tenella*, whereas 8 out of 20 untreated birds died.

The efficacy of 0.0125% nicarbazin was compared with 0.0125% sulphaquinoxaline and 0.0055% nitrofurazone in an experiment in which young chicks were inoculated with 100,000 sporulated oocysts of *E. tenella*. None of a group of infected untreated birds died, apparently because the oocysts used were "several months old". As a result of observations on caecal lesions and weight gains it was nevertheless concluded that nicarbazin was most efficacious. In an attempt to assess the toxicity of nicarbazin to non-infected chicks concentrations varying between 0.0125% and 0.1% were fed for periods of 14 days. It is stated that birds on mash containing 0.0125% of the drug consumed more food and consequently grew better than birds on unmedicated mash. As the concentration of the drug was increased food consumption was reduced. At the highest concentration tested (0.1%) deaths occurred. The only obvious pathological change was pronounced emaciation.—S. BRIAN KENDALL.

URICCHIO, W. A. (1956). The effect of allyl acetone in the treatment of experimentally induced cecal coccidiosis in chicks. — *J. Parasit.* **42**, No. 4.—Sect. 2. (Suppl.) p. 24. 435

Allyl acetone ( $\text{CH}_2=\text{CH}\cdot\text{CH}_2\text{CH}_2\text{CO}\cdot\text{CH}_3$ ) did not prove effective as a coccidiostat in the control of *Eimeria tenella*.—S. BRIAN KENDALL.

KARTASHEV, M. V. (1956). [Incidence of infection of *Dermacentor* ticks with piroplasms of the horse under various conditions in central Russia.] — *Sborn. Nauch. Trud. Kuibishev. vet. opit. Stants.* No. 2. pp. 117-125. [In Russian.] [Abst. from abst. in *Referat. Zh., Ser. Biol.* No. 17, p. 469. (1956).] 436

On the average, piroplasms were found in the salivary glands of 0.8% and in the eggs of 3.9% of *Dermacentor pictus* and *D. marginatus*. The proportion of infected ticks was higher in

districts where the latent type of piroplasmosis was prevalent in horses, than in districts where the disease was epidemic.—R.M.

ISAEV, V. I. (1954). [Method of determining hemosporidin (LP-2) and its persistence in the animal body.]—*Pharm. & Toxic.* **17**, No. 6. pp. 50-51. [In Russian. Abst. from abst. in *Referat. Zh., Ser. Biol.* No. 15., p. 471 (1956).] 437

The piroplasmicidal drug "hemosporidin" was injected s/c in horses and dogs at the therapeutic dosage of 0.3-0.5 mg./kg. body wt. It persisted in the urine for 22-28 hours; 65-70% of the dose was excreted by 12 hours after administration and 90% by the 24th hour. [In previous abstracts (*V.B.* **26**, 2247, 2577 & 3135) this drug has been wrongly referred to as an organic copper ester of benzhydrol. It is in fact a urea derivative, N,N'-di(4 dimethylaminophenyl) urea methyl methosulphate (Gerchuk, M.P., 1941).]—R.M.

LAVRENT'EV, P. A. (1956). [Treatment of *Theileria* infection in cattle with hemosporidin and "ASD-F2".]—*Veterinariya, Moscow.* **33**, No. 8. pp. 25-27. [In Russian.] 438

L. treated naturally infected cattle in Uzbekistan with hemosporidin, acriquine (mepacrine), naganin (suramin), furacillin, and "ASD-F2" ["Antiseptic Stimulant of Dorogov, Fraction 2": see *V.B.* **24**, 571]. Early treatment (1-2 days after rise in body temp.) with hemosporidin administered s/c or i/m cured 6 out of 7 cattle. When this treatment was combined with the oral administration of "ASD-F2", 207 out of 230 cattle recovered. Recovery rates for the other drugs and for "ASD-F2" alone ranged from 60 to 80%.—R.M.

GAYOT, G. & LOQUERIE, R. (1956). Recherches sur la theilériose. III. Étude du pouvoir préventif de la nivaquine à l'égard de la theilériose à *T. dispar*. [Research on *Theileria* infection. III. Prophylactic value of nivaquine (chloroquine) in *Th. dispar* infection.] — *Rec. Méd. vét.* **132**, 273-284. 439

It is concluded that nivaquine (chloroquine) has no prophylactic value in *Th. dispar* infection and might even be contra-indicated.—T.E.G.R.

RESHETNYAK, V. Z., PAKHOMOVA, N. G., LYUTOV, N. F. & SKRIPKINA, N. A. (1956). [*Hyalomma scupense* as transmitter of bovine anaplasmosis.]—*Veterinariya, Moscow.* **33**, No. 9. pp. 39-40. [In Russian.] 440

Bovine anaplasmosis commonly occurs in the southern zones of the U.S.S.R., where *Boo-*



*philus calcaratus* and *Rhipicephalus turanicus* predominate. Outside the area of distribution of these ticks, in the more northern zones, the authors demonstrated experimentally that *H. scupense* transmitted the disease.—R.M.

NÓBREGA, P., TRAPP, E. & GIOVANNONI, M.

(1955). Toxoplasmose espontânea de galinha. [Spontaneous toxoplasmosis in fowls.] — *Arch. Inst. biol. (Def. agric. anim.)*, S. Paulo, **22**, 43-49. [English summary.] 441  
A more detailed report of the outbreak previously reported [see *V.B.* **25**, 1967]. —R.M.

## DISEASES CAUSED BY VIRUSES AND RICKETTSIA

FLÜCKIGER, G. (1956). Über die Einschleppung der Maul- und Klauenseuche aus Belgien in die Schweiz und ihre Bekämpfung vom 14. Mai bis 5. Juli 1956. [Introduction of foot and mouth disease into Switzerland from Belgium and its control from May to July 1956.] — *Dtsch. tierärztl. Wschr.* **63**, 401-405. 442

The passage through Switzerland of a consignment of Belgian pigs with F. & M. disease, type C, was followed by outbreaks of the disease in farms skirting the railway line. The infection spread to a total of 1,264 cattle and 894 pigs before it was eradicated 7 weeks later. The control measures taken were: slaughter of affected herds, vaccination of endangered herds, disinfection, and restriction of traffic. Type C virus was demonstrated in the initial outbreaks, for the next 2-3 weeks type O only was found, and thereafter either type O or type A. It is considered that the original virus underwent mutation.—M.G.G.

RIVENSON, S., GARCÍA PIRAZZI, A. J. & FORREST, G. E. (1956). Variante "A" Palermo? [Foot and mouth disease type A variant in Palermo.]—*Gac. vet., B. Aires.* **18**, No. 99, pp. 4-8. 443

The authors cast doubts on the identification of a strain of F. & M. disease virus which was isolated from previously vaccinated cattle at a Livestock Show in Palermo. Although conflicting laboratory reports were given on the virus, it was said to be a variant of type A, without, apparently, very good grounds for the decision. The disease it caused was mild, with a short course, and of low infectivity.

—I. W. JENNINGS.

NIGGLI, J. (1956). Über die Persistenz des Maul- und Klauenseuche-Virus in der Leber und Milz des Rindes. [Persistence of foot and mouth disease virus in the liver and spleen of cattle.]—*Schweiz. Arch. Tierheilk.* **98**, 393-405. [English, French and Italian summaries.] 444

Of 64 cattle slaughtered 23 hours after infection with F. & M. disease virus, 4 had virus

in the liver and one in the spleen, as shown by mouse inoculation and complement-fixation tests. After 27 hours at 4°C. two livers still contained virus, but after 51 hours all livers were free from virus. The average pH of the 64 livers after 51 hours was 6.51.—M.G.G.

WESSLÉN, T. & DINTER, Z. (1956). The cultivation and titration of foot-and-mouth disease virus in cultures of different bovine tissues.—*Nord. VetMed.* **8**, 795-806. [In English. German and Swedish summaries. Authors' summary slightly modified.] 445

O, A and C strains of F. & M. disease virus were cultivated and titrated in cultures of bovine tongue, skin and kidney tissue. A cytopathogenic effect was constantly obtained in tongue and skin cultures. The results of titration in roller tubes agreed well with those in unweaned mice. In trypsinized kidney cultures an inhibitory effect of bovine amniotic fluid was observed. Complete cell destruction was obtained in kidney cultures with a synthetic medium at pH 7.6. In titrations these cultures could easily be examined microscopically or merely by observing differences in the colour of the degenerated and undegenerated cultures. The virus yield of cultures from trypsinized kidney was studied in growth curve experiments. In all strains tested optimal yields were obtained after 12 to 15 hours and were similar to those obtained in cattle. The neutralizing capacity of immune sera was estimated by titration in tongue and kidney cultures.

WILLEMS, R. & LEUNEN, J. (1956). Application de la méthode de culture du virus aphteux selon H. Frenkel. Résultats obtenus au laboratoire de Recherches vétérinaires de l'Etat, Uccle-Bruxelles. [Application of the foot and mouth disease virus cultivation method described by H. Frenkel. Results obtained by the State Veterinary Laboratory, Uccle, Brussels.]—*Bull. Off. int. Epiz.* **45**, 298-308. [English summary.] 446

A detailed account of a modification of the method described by Frenkel for the culture of F. & M. disease virus is given. Good results



were obtained with cultures of types O and C with high infectivity titres. A trivalent vaccine is now being produced. The immunizing properties of the culture virus are discussed.

—T.E.G.R.

RIVENSON, S. (1956). Los coadyuvantes en la inmunidad antiaftosa. [Foot and mouth disease; adjuvant vaccines.] — *Gac. vet., B. Aires*. 18, 140-158. 447

R. recommended saponin as being superior to aluminium hydroxide as a non-specific auxiliary medium in the production of immunity to F. & M. disease. Carboxymethylcellulose had a fairly good adjuvant action, but coagulated milk proteins had none.—I. W. JENNINGS.

DHANDA, M. R., GOPALAKRISHNAN, V. R. & DHILLON, H. S. (1956). Observations on the treatment of foot and mouth disease. — *Indian J. vet. Sci.* 26, Pt. 2, pp. 13-20. [Authors' summary modified.] 448

The therapeutic value was assessed of 5 drugs and substances claimed to be effective against F. & M. disease. None of them appeared to have any beneficial effect on artificial infection, either as a curative or as a prophylactic. The findings of other workers are discussed.

ANON. (1956). Aujeszky's disease in cattle. — *J. Amer. vet. med. Ass.* 128, 602. 449

In Arkansas, after 143 cattle had been moved into fattening pens with pigs, 60 were affected with Aujeszky's disease in a period of 30 days.—A. ACKROYD.

POPOVICI, I., TAGA, M. & BERBINSCHI, C. (1956). Vaccinarea contre bolii lui Aujeszky la porci. [Vaccination of pigs against Aujeszky's disease.] — *Anu. Inst. Pat. Igiene. anim.* 6, 75-80. [In Roumanian. Abst. from French summary p. 276.] 450

A live virus adsorbed vaccine, infective for rabbits inoculated intracerebrally, but of variable infectivity when inoculated intraperitoneally and harmless by the intramuscular and subcutaneous routes, was tested in pigs. 0.5 ml. inoculated i/m or s/c conferred immunity against challenge by the intracerebral route with 0.5 ml. virulent virus. In field outbreaks, mortality ceased after 12-15 days when piglets were vaccinated with 0.5 ml. and pigs aged 2 months with 1 ml. of this vaccine. Pregnant sows that had been vaccinated farrowed normally, their litters being healthy and resistant to natural infection.—F.E.W.

POPOVICI, I., TAGA, M., BERBINSCHI, C., CIRȘTEȚ, I. & COMAN, I. (1956). Repartiția

virusului bolii lui Aujeszky in organismul animalelor infectate experimental. [Distribution of the virus of Aujeszky's disease in experimentally infected animals.] — *Anu. Inst. Pat. Igiene. anim.* 6, pp. 81-87. [In Roumanian. Abst. from French summary p. 277.] 451

In sheep inoculated i/m with 1 ml. of a mouse-adapted strain of Aujeszky's disease virus (equiv. to 10 lethal doses for sheep) the virus was demonstrable at the site of inoculation until the death of the animal. Six hours after inoculation it was present in the afferent lymph nodes. After 48 hours it was present in the spinal cord, lungs, liver and spleen, but not in the brain and the blood of 17 sheep killed during the first 6 days. In pigs inoculated s/c with virus adsorbed on aluminium hydroxide, the virus was demonstrable at the site of inoculation up to the 6th day. After the 4th day it was present in the regional lymph nodes; from the 6-9th day it appeared in the more distant lymph nodes, being absent from the inoculation site and the afferent lymph nodes; 12 days after inoculation it was no longer demonstrable in any lymph nodes.—F.E.W.

SUHACI, I., URSACHE, R. & TOMESCU, V. (1956). Observatii asupra cultivării virusului Aujeszky pe embrionul de găină. [Cultivation of the virus of Aujeszky's disease in chick embryos.] — *Stud. Cerc. Inframicrobiol. Microbiol. Parazit., Bucuresti.* 7, 111-117. [In Roumanian. French and Russian summaries.] 452

The virus was cultivated by intracerebral inoculation into 9-day-old chick embryos. Attempts to infect embryos by other routes failed. After 8 intracerebral passages the virus could be adapted to the chorio-allantoic membrane. Virulence of the virus for rabbits did not decrease after 30 embryo passages. The virus attained a greater concentration in the chick embryo than in the brain of rabbits.

—R.M.

ROLLINSON, D. H. L. (1956). Problems of rabies control in Africa. — *Bull. Epiz. Dis. Afr.* 4, 7-16. In French pp. 87-96. 453

The epidemiology and control of the disease in certain territories in Africa are discussed. The main anti-rabies measures are: control of vectors (dogs and wild animals); and vaccination. The vaccine commonly used is the avianized Flury strain, which is considered to confer a solid immunity.—T.E.G.R.

REMLINGER, P. & HADJI, A. (1956). Contribution à l'étude du virus Flury. [A study of

the Flury strain of the rabies virus.]—*Arch. Inst. Pasteur Algér.* **34**, 198-199. 454

The authors continued to passage the Flury strain of rabies virus in rabbits [see also *V.B.* **24**, 1093; **25**, 1977]. In 1956 the illness was of one type only:—violent epileptiform crises commencing 7-9 days after intracerebral inoculation, followed by death 1-7 days later. Further results were increased receptivity of the rabbit and severity of the infection, and disappearance of the paralytic form. The authors consider that the Flury strain is hardly suitable to take the place of the Pasteur viruses in the vaccination of animals.—M.G.G.

POUL, J. & RAMPON, R. (1956). Vaccination antirabique par voie intradermique. [*Rabies immunization by the intradermal route.*]—*Arch. Inst. Pasteur Algér.* **34**, 201-204. 455

Good immunity to rabies was produced in 39 dogs by i/d inoculation of formol vaccine or live vaccine. However, as the formol vaccine produced strong local reactions and requires 15 daily injections and as the use of live vaccine is hazardous, they are considered to be of little practical value.—M.G.G.

WYNOHRADNYK, V. & CIRSTET, I. (1956). Vaccinarea contra variolei ovine cu virusul variolic viu atenuat. [*Vaccination against sheep pox with live attenuated virus, adsorbed on aluminium hydroxide.*]—*Anu. Inst. Pat. Igiene. anim.* **6**, pp. 195-204. [In Roumanian. Abst. from French summary p. 292.] 456

Sheep and lambs inoculated s/c with sheep pox virus adsorbed on  $Al(OH)_3$  developed in 3-4 days a solid immunity which lasted up to 8 months in 89% of cases. The adsorbed virus remained active after storage in the refrigerator for one month. The use of live attenuated strains is recommended, the vaccine being simpler to prepare and apply and cheaper than when formolized virulent strains are used. Vaccines prepared from virulent virus, however, caused no specific lesions, even in pregnant ewes and their foetuses. The Indochina strain was the attenuated strain used: the dose of vaccine (1 ml.) contained 2% of virus.—F.E.W.

DULBECCO, R., VOGT, M. & STRICKLAND, A. G. R. (1956). A study of the basic aspects of neutralization of two animal viruses, Western equine encephalitis virus and poliomyelitis virus.—*Virology*, **2**, 162-205. 457

Antiserum was allowed to act on the viruses of Western equine encephalomyelitis (WEE) and poliomyelitis type 1 (P1) in a test tube and

the proportion of virus escaping neutralization was determined by the plaque technique after having removed the remaining free antibody either by dilution or washing the assay plates. The neutralization was found to proceed with time as a first order reaction; its rate was proportional to the concentration of antibody and was affected by temperature. The virus particle was capable of combining with more than one molecule of antibody. Virus-antibody complexes were stable at 37°C., pH 7.5, and physiological ionic strength. No reaction (PI) and only slight reactivation (WEE) occurred on diluting the incubated virus-antibody mixture, but reactivation did occur if high titre virus, active or inactivated by ultra-violet light, was added to the incubated WEE-antiserum mixture. Even at high concentrations of antibody and after long incubation, a fraction of the viruses remained active. This persistent fraction could not be attributed to virus particles reactivated by dissociation, to the absence of co-factors or the presence of inhibitors, and was non-hereditary. At low antibody concentrations the final virus survival depended on the antibody/virus ratio. A theory of neutralization is expounded and a hypothesis put forward to explain the influence of the cell system on certain results obtained by the end-point technique.

—A. ACKROYD.

ȘERBĂNESCU, C. & DRĂGHICI, D. (1956). Modificările histologice întinse la nivelul sistemului excito-conductor în anemie infecțioasă. [*Histological changes in the impulse conduction system of the heart in equine infectious anaemia.*]—*Anu. Inst. Pat. Igiene. anim.* **6**, pp. 163-175. [In Roumanian. Abst. from French summary p. 288.] 458

The histological lesions in the muscle fibres comprised:—degenerative changes characterized by tumefaction of cells and rarefaction and even disappearance of myofibrils, with vacuolization of sarcoplasm and nuclei; inflammatory changes with intercellular lymphoid infiltration, most frequently at the level of the His's bundle and the Aschoff-Tawara bundle. Similar type lesions were found in the myocardium. Although the changes are not specific for equine infectious anaemia, they might explain the cardiac symptoms.—F.E.W.

BRILL, J. & WOYCIECHOWSKA, S. (1956). Avortements dus à différents ultra-virus chez les solipèdes en Pologne. [*Virus abortion of mares in Poland.*]—*Bull. Off. int. Epiz.* **45**, 486-488. 459

A survey during 1949-53 by the Research



Centre at Warsaw covered 33 breeding centres. Equine virus abortion was diagnosed on 6 premises where 31 animals were affected; there were 5 cases of equine influenza at one stud and 2 cases of equine infectious anaemia at another.

—T.E.G.R.

ANON. (1956). Cutaneous lesions in rinderpest. —*Bull. Epiz. Dis. Afr.* 4, 81-82. In French pp. 150-151. 460

This is an editorial note and deals with a communication received from Mornet, F., of Dakar, who stated that cutaneous lesions had been observed in the dry weather which did not in any way resemble those of streptothricosis. Cases which develop skin lesions are frequently mild and often followed by recovery.

BROWN, R. D. (1956). The production of antibodies by very young calves. —*Vet. Rec.* 68, 653. 461

Neutralizing antibodies were found in the sera of calves, the progeny of dams susceptible to rinderpest, 21 days after the inoculation of 80 cattle ID<sub>50</sub> of lapinized rinderpest virus. Sera of the calves taken before inoculation were free from rinderpest neutralizing antibodies. Neutralization titres 3 weeks after inoculation at 1, 4, 5, 29, and 63 days of age were  $10^{1.4}$ ,  $10^{2.6}$ ,  $>10^{2.8}$ ,  $10^{2.5}$  and  $10^{2.8}$  respectively. —M.G.G.

ROUSSELOT, R. & COGITORE, A. (1955). Fièvre de trois jours du boeuf au Congo. Reproduction de la maladie par inoculation chez le boeuf. Inoculation des phlébotomes au chimpanzé. ["Three-day fever" of cattle in the Congo. Experimental infection of cattle by blood inoculation and of a chimpanzee by inoculation of a suspension of *Phlebotomus*.] —*Rev. Elev.* 8, 311-315. 462

The disease was reproduced, by i/v inoculation of blood from infected cattle, in 3 out of 6 animals and, in one case, with all the symptoms. Immunity was weak and transient and varied with the individual animals. *Phlebotomus* spp., which were considered responsible for a febrile condition in two cowmen, were ground in broth and inoculated s/c into the abdomen of a chimpanzee. A febrile reaction, accompanied by symptoms similar to those observed in cattle, was produced.

—T.E.G.R.

PAY, T. W. F. (1956). Growth of bovine amniotic ectoderm as a cell monolayer on glass and its use as a system for virus multiplication. —*Nature, Lond.* 177, 752-753. 463

A detailed description of the preparation, from bovine amniotic membrane, of monolayer cultures of cells on glass. —T.E.G.R.

KOZŁOWSKI, J. & DZIEKOŃSKI, J. (1956). Zarażenie się człowieka zakaźnym zapaleniem skóry owiec (*Ecthyma contagiosum*). [Infection in man with ovine contagious pustular dermatitis.] —*Méd. vét., Varsovie.* 12, 454-459. [In Polish. English and Russian summaries.] 464

An account of an outbreak where 60% of a flock, including all ages of sheep, were affected. The shepherd contracted the disease and had lesions on hands, chin and umbilicus; his regional lymph nodes were not affected and no evidence of systemic reaction was noted. The disease lasted six weeks and the lesions left no scars. By using the exudate from human lesions the disease was produced experimentally in a g. pig, but ground scabs from sheep lesions failed to reproduce it. —M. GITTER.

SHIRLAW, J. F. (1956). A preliminary note on successful vaccination of sheep in Kenya against progressive enzootic pneumonia (*Laikipia lung disease*). —*Bull. Epiz. Dis. Afr.* 4, 57-59. In French pp. 123-125. 465

An emulsion of infected lung treated with 1% formalin was used as a vaccine. Over one year, mortality was 1% among vaccinated lambs while it was 30% among controls. Vaccination at 1 month and again at 3 months is recommended. —T.E.G.R.

LUCAS, A., BOULEY, G., QUINCHON, C. & GOURDON, J. (1956). Le vaccin au cristal violet dans la lutte contre la peste porcine. [Control of swine fever with crystal violet vaccine.] —*Rec. Méd. vét.* 132, 456-467. 466

Vaccines were produced from two strains of virus. Groups of 1-3 pigs were protected, by a single s/c dose, against the corresponding virus when challenged at 15 days. There was no cross-protection. When administered simultaneously the vaccines gave complete protection against challenge infections of either virus at 35 days. Two injections of the single-strain vaccine were sufficient to confer protection against both viruses. Simultaneous administration of serum appeared to depress, rather than enhance, the degree of protection. —A. SEAMAN.

I. WYNOHRADNYK, V., PAPADOPOL, M. & COMAN, I. (1956). Efectul excitatiilor specifice repetate in formarea imunității contra pestei porcine. [Effect of repeated inoculations of vaccine on immunity of pigs to swine fever.] —*Anu. Inst. Pat. Igiene.*

*anim.* 6, pp. 25-34. [In Roumanian. Abst. from French summary p. 273.] 467

- II. ȘERBĂNESCU, C. & SOLNITZKY, A. (1956). Studiul modificărilor histologice la porcii inoculați cu vaccin antipestos porcin adsorbit pe hidroxid de aluminiu. [Histological changes in pigs inoculated with aluminium hydroxide swine fever vaccine.]—*Ibid.* pp. 35-45. [In Roumanian. Abst. from French summary p. 273.] 468

I. In trials in 78 pigs, 3-4 months old, using two types of adsorbate vaccine (Inst. Pasteur, Bucharest) and a crystal violet vaccine prepared by the authors, it was found that, except with crystal violet vaccine, the immunity was not enhanced by giving the vaccine in two half doses at an interval of 1-3 weeks instead of a single inoculation. The pigs were challenged, 1, 2, 3, 4 and 7 months after vaccination, with  $10^6$  m.l.d. of virulent virus.

II. An inflammatory nodule having the structure of a foreign-body granuloma in which particles of  $Al(OH)_3$  persisted, developed at the site of inoculation of the vaccine and was not completely resorbed after the 30th day. The most pronounced reaction process was found in the lungs 15-30 days after inoculation: the alveolar walls had increased in thickness as a result of the lymphohistiocyte reaction and endothelial proliferation. The inguinal and tracheo-bronchial lymph nodes were those most severely affected. Blockage of the reticulo-histiocyte system at the level of the lungs and the lymph nodes appeared to indicate activation of latent infections.—F.E.W.

- PLACIDI, L. (1956). Sur la peste et quelques autres virozes du porc à caractère épizootique. [Swine fever and other virus diseases of pigs.]—*Bull. Off. int. Epiz.* 45, 384-392. 469

In this discussion of the literature, P. divided the diseases into neurotropic, viscerotropic, pneumotropic and dermatotropic infections. Each section contains the appropriate references to the original descriptions.

—A. SEAMAN.

- MADIN, S. H. (1956). Preliminary studies on the prophylactic and therapeutic values of type B vesicular exanthema immune serum.—*J. Amer. vet. med. Ass.* 129, 368-370. 470

Five out of 7 pigs were protected against generalized vesicular exanthema, type B, by s/c injection of homologous immune serum 4 hours after i/d inoculation of the virus; 4 out of 7 pigs were protected which received immune serum 24 hours after infection. All of a group

of pigs which received immune serum resisted challenge 14 days later, and 6 out of 10 resisted challenge 28 days after receiving immune serum. All the control pigs in these two trials developed generalized vesicular exanthema.—M.G.G.

- FERRINI, R. & GIAMPORCARO, S. (1956). Sulla utilità ai fini diagnostici e prognostici del quadro leucocitario nel cimurro del cane. [Value of the white blood picture in dog distemper.]—*Progr. vet., Torino*. 11, 576, 578-580. 471

A discussion of the diagnostic and prognostic value of changes in the leucocytic formula of the blood, based on the examination of 10 dogs with various clinical forms of distemper.

—F. R. PAULSEN.

- PRIER, J. E. (1956). Serologic relationship of poliomyelitis virus and the virus of infectious canine hepatitis.—*Vet. Med.* 51, 479-480. 472

In a limited study there was a higher percentage of reactions to canine virus hepatitis antigen in the sera of patients with poliomyelitis than in those of patients with other virus diseases and in normal human sera. It is suggested that canine hepatitis virus and an unidentified virus which is infective for man may have a common antigenic factor.—M.G.G.

- MOULDER, J. W., COLÓN, J. I., RUDA, J. & ZEROVITZ, M. M. (1956). The effect of penicillin on multiplying and non-multiplying populations of sensitive and resistant strains of feline pneumonitis virus.—*J. infect. Dis.* 98, 229-238. 473

When treated *in vitro* for 2 hours with penicillin in a concentration of 400,000 units per ml., non-multiplying suspensions of parent and penicillin-resistant strains of feline pneumonitis virus lost their ability to multiply in chick embryos. Treatment with penicillinase partially reversed the inactivation. The action of penicillin on multiplying virus appeared entirely viristatic and not viricidal. The penicillin resistant strain in the presence of penicillin was more capable of invading susceptible cells and initiating multiplication than was the parent strain.—A. ACKROYD.

- HOTZ, G. & SCHÄFER, W. (1955). Ultrahistologische Studie über die Vermehrung des Virus der klassischen Geflügelpest. [Ultra-histological study of the multiplication of fowl plague virus.]—*Z. Naturf.* 10b, 1-5. 474

Thin histological sections of allantoic membrane from chick embryos infected up to 6 hours previously with the virus of classical fowl plague were examined by electron microscopy.



Deviations from the normal picture commenced 4-5 hours after infection, with the formation of protrusions from the edges of the cells. At the 6th hour particles resembling elementary bodies were observed at the cell surface; they were not seen within the cell. There are 17 photomicrographs.—R.M.

RUSSEFF, C. G. (1956). Der Wert der Komplementbindungsreaktion bei der atypischen Geflügelpest im Vergleich mit der Hämagglutinationshemmungsreaktion. [**Comparison of the complement-fixation test and the haemagglutination-inhibition test in the diagnosis of Newcastle disease.**]—*Arch. exp. VetMed.* **10**, 46-49. 475

The sera of 62 fowls inoculated with non-pathogenic Newcastle disease virus were all positive to the c.f. test and to the haemagglutination-inhibition (H.I.) reaction, but 4 sera were negative and 2 doubtful to the rapid H.I. test. The antibodies which inhibit haemagglutination are fairly thermostable but those which fix complement are destroyed by heat.—M.G.G.

NITZSCHKE, E. & VENSKE, W. (1956). Vergleichende Untersuchungen mit der Hämagglutinations-Hemmungs-Probe an Blutseren, Organextrakten und Blutgerinnselabgüssen von geflügelpestinfizierten Hühnern. [**Comparative evaluation of the haemagglutination-inhibition test using serum, organ extracts and blood clots from fowls infected with Newcastle disease.**]—*Berl. Münch. tierärztl. Wschr.* **69**, 288-290. [English summary.] 476

In 45 fowls artificially infected with Newcastle disease virus the blood serum and extracts of liver, spleen and blood clots were examined by the haemagglutination-inhibition test. Blood serum was the most reliable source of antibodies and should always be used in the confirmation of an outbreak, while tissue extracts are useful in confirming the disease P.M.—W. G. SILLER.

HOFSTAD, M. S. (1956). Immunization of chickens against infectious bronchitis using an embryo-passaged attenuated strain of virus.—*Vet. Med.* **51**, 464-468. 477

Chickens of various ages were exposed to aerosols of infectious bronchitis virus after 67, 53 and 42 passages in chick embryos. Only the virus which underwent 42 passages produced a satisfactory immunity lasting for at least 10 months.—M.G.G.

ATANASIU, P. (1956). Hépatite spontanée à virus associée chez l'embryon de poulet à la leucose érythroblastique. [**Spontaneous virus hepatitis in chick embryos, associated with**

avian erythroblastic leucosis.]—*C. R. Acad. Sci., Paris.* **243**, 719-721. 478

Hepatitis was observed in chick embryos, 6-7 days after inoculation with the 158th passage of the virus of avian erythroblastic leucosis. The agent causing hepatitis could not be transmitted to adult fowls, but killed 50% of embryos inoculated i/v. It was not neutralized by infectious bronchitis immune serum and it did not agglutinate avian r.b.c. It passed through a 150  $\mu$  gradocol membrane, and has been passaged 70 times in embryos.—R.M.

VERGE, J. & PLACIDI, L. (1956). Recherches sur le comportement réciproque du virus de Newcastle et du virus rabique fixe inoculés, ensemble ou séparément, dans l'encéphale de la poule et du cobaye. [**Reciprocal behaviour of the viruses of Newcastle disease and rabies in the brain of the fowl and the g. pig.**]—*Rev. Immunol.* **20**, 100-104. 479

It is considered that: interference with the species-adapted virus occurs in either species when a mixture of the two viruses is inoculated; both viruses maintain their full virulence; the less virulent virus may, if injected into the brain some time before the more virulent one, interfere with and retard the growth of the latter; a close combination of the viruses may result from long contact in an animal immunized against the virus with shorter incubation, and neutralization of that one may bring about neutralization of the other.—T.E.G.R.

HORSEFALL, F. L., JR. (1956). Mumps and Newcastle virus reproduction.—*Science*, **123**, 674. 480

Enumeration procedures showed that the infective property of mumps virus had a half-life of about 80 min. at 33°C.; that of Newcastle disease virus (N.D.V.) was about 10 hours. The half-life of the haemagglutinating property of both was more than 16 hours. New particles of mumps virus were not released before 24 hours but those of N.D.V. and influenza virus appeared in less than 3 hours. During the constant phase of log. increase, the number of particles of mumps virus doubled in 15 hours but that of N.D.V. in 45 min. The max. yield of mumps virus per allantoic cell was about 50 particles compared with 1,000 for N.D.V. and influenza. With initial particle/cell ratios of upwards of 3:1 there were changes in the reproduction of mumps and influenza viruses, a high proportion of haemagglutinating but non-infective particles emerging. This did not occur with N.D.V.—A. ACKROYD.

GIROUD, P. & JADIN, J. (1956). Comportement sérologique et isolement de souches néo-

rickettsiennes chez des veaux en allaitement.  
[Serological behaviour and isolation of neorickettsia in calves.] — *C. R. Acad. Sci., Paris*, **243**, 721-724. **481**

A disease of calves aged 1-3 months, in a district of the Belgian Congo, was characterized by slight fever and emaciation, sometimes with paresis and diarrhoea, usually fatal. *Theileria* were present in the blood, but in the authors' opinion there were not enough of them to cause disease. Of sera from 11 calves, 2 gave slight reactions (1:20 and 1:40) to *Rickettsia burneti* antigen and 9 gave strong reactions (1:40-1:60) to the "neorickettsia" antigen X14. The inoculation of blood from affected calves was fatal for lab. animals, and agglutinins to strain X14 were present in some of these animals.—R.M.

EVANS, A. D. (1956). **Q fever in South Wales.** — *Mon. Bull. Minist. Hlth Lab. Serv.* **15**, 215-219. [Author's summary modified.] **482**

Of 1,311 samples of raw milk from individual herds in South Wales 66 (5%) contained *Rickettsia burneti* as shown by the production

of antibodies in inoculated g. pigs; 52 out of 136 samples of mixed milk and 6 out of 110 samples of pasteurized milk were positive. C.f. tests revealed specific antibodies in 52 (2.7%) of 1,954 sheep sera and in 49 (4.1%) of 1,202 human sera. Clinical cases of Q fever are, however, uncommon. Of 2,482 consecutive cases of non-bacterial pneumonia in South Wales only 15 appeared to be caused by *R. burneti*.

Roux, J. (1956). Le pouvoir pathogène de *Rickettsia burneti* pour le cobaye: variations expérimentales. [The pathogenicity of *R. burneti* for the g. pig.] — *C. R. Soc. Biol., Paris*, **150**, 782-784. **483**

A strain of *R. burneti*, which would kill 40% of g. pigs when injected at a titre of  $10^{-2}$ , suddenly became highly pathogenic. Inoculated at a titre of  $10^{-5}$  it killed all g. pigs, which often exhibited encephalitis or keratitis. *R. burneti* was recovered from the brain, optic nerve and cornea of these animals. The strain also lost its ability to grow in embryonated eggs.

—M.G.G.

## IMMUNITY

MUIRHEAD, E. E. & GROVES, M. T. (1956).

**Positive antiglobulin (Coombs) test of canine erythrocytes induced by lipid solvents in vitro.**—*Amer. J. clin. Path.* **26**, 844-854. [Interlingua summary. Authors' summary modified.] **484**

Positive reactions were induced by treating canine r.b.c. with lipid solvents; the addition of trypsin accentuated agglutination. Whole blood gave stronger reactions than washed r.b.c. Positive reactions may result from one or more non-immune mechanism.

COCK, A. G. & CLOUGH, M. (1956). **Successful skin homografts in inbred chickens.**—*Nature, Lond.* **178**, 136-137. **485**

Skin-grafting experiments were carried out

on three lines of poultry namely *I* (coefficient of inbreeding 98.75%), *C* (98.9%) and *M* (78.5%). Homografts were exchanged between pairs of chickens 13-14 days after hatching, and each chick received in addition an autograft. 80 out of 86 *I* line homografts appeared to be permanent, a similar proportion of the autografts being permanent on the same hosts. It is concluded that the tissue antigens of the *I* line are sufficiently uniform for most experimental purposes. However, agglutination tests have shown that the *I* line is segregating for at least one pair of alleles determining red cell antigens. The *C* line was less uniform than the *I* line, whilst the *M* line although having a lower coefficient of inbreeding was comparable to the *I* line in uniformity.—A. E. PIERCE.

See also absts. 343 & 346 (Middlebrook-Dubos test); 351 (allergic reaction in man during tuberculin testing of cattle); 364-365 (glanders); 377 (limitations of the ring test); 380-381 (Strain 19); 382 (skin test for brucellosis); 383 (diagnosis of brucellosis); 384-385 (immunization against brucellosis); 396-398 (leptospirosis); 481 (avian coccidiosis); 447 (F. & M. disease vaccines); 450 (Aujeszky's disease); 453-455 (rabies); 456 (sheep pox); 461 (antibodies against rinderpest in serum of young calves); 465 (Laikipia lung disease); 466-468 (swine fever); 475-476 (Newcastle disease); 477 (avian infectious bronchitis); 481 (serological behaviour of neorickettsia in calves); 501 (helminths).

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

WULF, G. (1955). Versuche zur Abtötung der Dassellarven durch Abdeckung und neue Waschmittel. [Killing *Hypoderma* larvae by covering the warbles or by applying new parasitocides.]—*Inaug. Diss., Hanover*, pp. 31. **486**

Covering of either the whole of the back or warbles only, with adhesive rubber sheets or with rubber soln. proved of no value in the control of *Hypoderma*. A rotenone preparation killed only about 30% of larvae, a dieldrin-derris preparation killed up to nearly 90% but



caused unrest in cattle. Details were given of results obtained with 3 other preparations the composition of which, however, was not stated, and for which an effectivity of 90.4–93.9% was claimed.—E.G.

JEWELL, G. R. (1956). **Marking of tsetse flies for their detection at night.**—*Nature, Lond.* **178**, 750. **487**

At a distance of 15 feet tsetse flies marked on the thorax with fluorescent paint shone brilliantly in a beam of ultra-violet light.

—M.G.G.

ANON. (1956). Campagne pilote de lutte active contre *Boophilus microplus* (Can) Lah dans le district Alcaraz du département La Paz (Entre Rios). [**Control of *Boophilus Micro-***

*plus in Argentina.*—*Bull. Off. int. Epiz.* **45**, 489-496. **488**

The cattle were dipped at intervals of 10, 15 or 25 days according to degree of infestation. It is claimed that changing the dipping fluid every 6 months, alternating between sodium arsenite and chlorinated camphene, will delay the occurrence of resistance in *Boophilus* and aid eradication.—JAS. G. O'SULLIVAN.

KUSOV, V. N. (1955). [**Ecological factors in epidemic tick paralysis of sheep.**]—*Trud. Inst. Zool., Alma-Ata* **3**, 27-43. [In Russian.] **489**

Under natural conditions in southern Kazakhstan, tick paralysis is caused by the immature stages of *Ornithodoros lahorensis*. It first occurs 3 weeks after placing sheep on infested pastures.—R.M.

See also absts. 436 (tick vectors of piroplasmosis); 440 (*Hyalomma scupense* transmitting anaplasmosis); 462 (*Phlebotomus* and "three day fever").

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

JENNINGS, F. W., MULLIGAN, W. & URQUHART, G. M. (1956). **Radioisotope studies on the anemia produced by infection with *Fasciola hepatica*.**—*Exp. Parasit.* **5**, 458-468. [Authors' summary modified.] **490**

Red cells labelled with P<sup>32</sup> and serum albumen labelled with I<sup>131</sup> were used to study the anaemia associated with *F. hepatica* infections in rabbits and to estimate the daily loss of blood. The loss as calculated from the experiments with P<sup>32</sup> was sufficient to account for the anaemia. When the labelled serum albumin and red cells were used simultaneously it was found that the P<sup>32</sup>/I<sup>131</sup> ratio in the flukes was consistently higher than that in the blood. The use of radioisotope techniques in the study of this type of problem is discussed.

BELL, E. J. & HOPKINS, C. A. (1956). **The development of *Diplostomum phoxini* (Strigeida, Trematoda).**—*Ann. trop. Med. Parasit.* **50**, 275-282. [Authors' summary copied verbatim.] **491**

The development is described of the strigeid trematode *Diplostomum phoxini* in the domestic duck. Maturation takes 3–4 days. A simple procedure is given for preparing aseptic cultures of the metacercarial stage taken from the brain of minnows. The results of cultivation in various media are compared, with longevity and the rate of cell division used as criteria. The findings are discussed, with particular reference to the nature of the stimulus which initiates maturation.

DURIE, P. H. (1956). **The paramphistomes (Trematoda) of Australian ruminants. III. The life history of *Calicophoron calicophorum* (Fischöeder) Nasmak.**—*Aust. J. Zool.* **4**, 152-157. [Author's summary copied verbatim.] **492**

A description of the life-history of *Calicophoron calicophorum* (Fischöeder 1901) Nasmak 1937 is given, and the larval stages of this parasite within the snail intermediate host *Pygmanisus pelorius* (Iredale 1943) are described. The pre-patent period for this fluke in a lamb was found to be in the vicinity of 80–95 days.

GINSBERG, A., CAMERON, J., GODDARD, W. B. & GRIEVE, J. M. (1956). **Bovine cysticercosis with particular reference to East Africa.**—*Bull. Epiz. Dis. Afr.* **4**, 27-39. In French pp. 103-114. **493**

A survey of the incidence of *Cysticercus bovis* in Kenya was made in 42,500 European owned and 12,850 African owned cattle, with reference to their origin, age and sex, and the location and number of cysts. Using normal routine inspection methods, with certain modifications introduced by the writers, the predilection site was found to be shoulder muscles, followed by the tongue, heart, masseter, adductor, oesophagus, diaphragm and psoas muscles in order of frequency. The highest incidence occurs in beasts up to 5 years old, but this fact has no practical value in eradication in a big meat producing area where beasts for

slaughter are, in any case, in this age group. 29.4% of carcasses of African owned stock and 30.6% of European owned stock were infested, 17.9% of the latter harbouring a single cyst.

—M. L. CLARKE.

GUILDAL, J. A. (1956). Mågers betydning som spredere af baendelormeæg. [Significance of gulls as carriers of *Taenia* eggs.]—*Nord. VetMed.* **8**, 727-733. [In Danish, English and German summaries. Abst. from English summary.] 494

Of 146 gulls shot at a sewage plant, 7 had eggs of *T. saginata* in the gastro-intestinal tract. One heavily infested bird carried about 28,000 eggs.

GOULD, S. E., GOMBERG, H. J., VILLELLA, J. B. & HERTZ, S. (1956). Morphologic changes produced in adult trichinae by gamma radiation.—*Amer. J. Path.* **32**, 642-625. 495

Various measurements were made of the gonads of male and female trichinella recovered from the intestines of white rats three and six days after infection with larvae which had been irradiated with 1,000–15,000r of cobalt-60, and 1,000–4,000r of X-rays. It seemed likely that various granular degenerations and disintegrations reported were factors in causing obstruction of the vagina and vulva of the female worms which may have prevented their fertilization.—D. S. PAPWORTH.

SCHMIDT, E. C. H. & RICHTER, C. P. (1956). Cirrhosis of the liver in wild rats.—*Amer. J. Path.* **32**, 633. 496

In a histological survey of the livers of 54 adult wild rats, 51 showed some degree of scarring, and 19 of these harboured the ova or adults of the nematode, *Capillaria hepatica*, in various stages of degeneration. A study of the livers of 8 further animals showed that those weighing less than 160 g. had no cirrhosis and no parasites. Other factors being ruled out, it was believed that *C. hepatica* was the cause of the cirrhosis.—D. S. PAPWORTH.

LAI, M. (1956). La strongilosa gastro-intestinale dei ruminanti in Sardegna. Nota I—Gli strongili dell'abomaso. [Gastro-intestinal strongylosis in ruminants in Sardinia. I. Abomasum.]—*Clin. vet., Milano.* **79**, 65-71. [English summary.] 497

Strongyles were found in 168 of 339 cattle, in 244 of 337 sheep and in all of 286 goats examined. The parasites belonged to 11 species: *Haemonchus contortus*, *Ostertagia ostertagi*, *O. circumcincta*, *O. trifurcata*, *O. pinnata*, *O.*

*lyrata*, *Cooperia punctata*, *Trichostrongylus capricola*, *T. vitrinus*, *T. extenuatus*, *T. colubri-formis*.—T.E.G.R.

LEE, R. P. (1956). Strategic medication against *Neoscaris vitulorum*.—*Bull. Epiz. Dis. Afr.* **4**, 61-63. In French pp. 127-129. 498

In two experiments using 63 calves in all, good results are reported from the prophylactic administration of piperazine adipate. A single dose of 100 mg. per lb. body wt. was given to calves aged 21 days.—M. L. CLARKE.

SHUMARD, R. F. & EVELETH, D. F. (1956). Further studies on the anthelmintic action of piperazine citrate.—*Vet. Med.* **51**, 515-517. [Authors' summary modified.] 499

Trials with piperazine citrate indicated that high anthelmintic efficiency against *Ascaridia galli* is obtained with 2,000–4,000 mg. per gal. of drinking water. Preventive levels as low as 1,000 mg. per gal. daily were highly effective.

Piperazine citrate in the drinking water at 4,000 mg. per gal. removed ascarids from turkeys. Single doses of 170, 270, 430 and 730 mg. of the drug per kg. body wt. removed *Ascaris lumbricoides* from pigs; 8,000 mg. per gal. of water mixed with a single feed to give a dose of 570–670 mg./kg. per animal was also effective.

ENIGK, K. & MARKWARDT, M. (1956). Die Behandlung der latenten Helmintheninvasionen bei Schwein und Huhn. [Treatment of latent helminth infestation in pigs and fowls.]—*Berl. Münch. tierärztl. Wschr.* **69**, 347-350. [English summary.] 500

Ascarid infestations were eliminated in fowls by 3 successive daily doses of 60 mg./kg. body wt. of cadmium anthranilate in the mash or piperazine citrate or adipate in the drinking water (2 g./litre) for 4 days. In pigs 3 daily administrations of 30 mg./kg. body wt. cadmium anthranilate were effective against ascarids, and a single dose of 300 mg./kg. of the piperazine preparations eliminated ascarids and was effective to 50% against *Hyostromylus*, *Oesophagostomum* and *Trichuris* infestations.

—W. G. SILLER.

BOCH, J. (1956). Zur Frage der Resistenz und Immunität der Wiederkäuer gegenüber parasitischen Würmern. [Resistance and immunity in ruminants to parasitic worms.]—*Zbl. VetMed.* **3**, 402-418. [English, French and Spanish summaries.] 501

Faecal examination in some 10,000 cattle, sheep and wild ruminants revealed an innate immunity, or an acquired resistance, to *Fasciola*



*hepatica*, *Moniezia* spp., lungworms, trichostrongyles and ascarids. Whereas *Fasciola* and *Moniezia* developed equally in domestic animals of all ages and breeds, cattle showed a greater resistance to lungworms than did sheep and other ruminants. No age resistance or congenital immunity to trichostrongyles was observed, but acquired immunity produced carrier animals, a source of danger to youngstock. B. stressed the importance of faecal examinations of apparently healthy as well as of sick animals, and of the role of feeding and animal husbandry in controlling parasitism.—M. L. CLARKE.

MACKIE, A., STEWART, G. M. & MISRA, A. L. (1955). *In-vitro* testing of benzothiazoles and some phenothiazine derivatives against *Ascaris lumbricoides* and liver fluke (*Fasciola hepatica*).—*Arch. int. Pharmacodyn.* **103**, 187-191. **502**

Several benzothiazole derivatives were effective against *in vitro* preparations of these helminths; the most active was 6-nitro-2-mercaptobenzothiazole. Out of 7 phenothiazine derivatives tested, 2 had a lethal action on the liver fluke at a conc. of 1:1,000. [See also *V.B.* **22**, 3120; **24**, 160 & **25**, 1391.]—R.M.

#### SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

ERIKSSON, K., DYRENDahl, S. & GRIMFELT, D. (1956). A case of hirsutism in connection with hypophyseal tumour in a horse. — *Nord. VetMed.* **8**, 807-814. [In English. German and Swedish summaries. Authors' summary modified.] **505**

Abnormal hairiness was found in an 18-year-old mare in connexion with hypophyseal adenoma originating from the intermediate lobe. Other symptoms were polydipsia and tiredness. These symptoms correspond to those of Cushing's syndrome in man.

RUSSELL, W. O., WYNNE, E. S. & LOQUVAM, G. S. (1956). Studies on bovine squamous carcinoma ("cancer eye"). I. Pathological

anatomy and historical review. — *Cancer*, N. Y. **9**, 1-52. **506**

A review of the literature and a detailed account of the pathology of 830 affected eyes. There are 70 photomicrographs and 2 coloured plates.—R.M.

BRUNDIERS, H. (1955). Untersuchungen über Hautlymphknoten bei gesunden und kranken Rindern mit besonderer Berücksichtigung der Leukose. [The superficial lymph nodes in healthy and diseased cattle with special reference to leucosis.] — *Inaug. Diss., Hanover*. pp. 29. **507**

A study on the value of superficial lymph nodes as a diagnostic aid in bovine leucosis, based on examination of 1,918 cattle.—E.G.

See also abet. 478 (virus hepatitis in fowls associated with erythroblastic leucosis).

#### NUTRITIONAL AND METABOLIC DISORDERS

WINCHESTER, C. F. & MORRIS, M. J. (1956). Water intake rates of cattle.—*J. Anim. Sci.* **15**, 722-740. **508**

The water intake of cattle is in direct pro-

BOCH, J. (1956). Der Wurmbefall bei Schweinen verschiedenen Alters. [Worm infestation in pigs of different ages.] — *Dtsch. tierärztl. Wschr.* **63**, 381-384. **503**

From a review of the relevant literature and from his own findings in 895 pigs, B. concluded that *Strongyloides* and *Ascaris lumbricoides* are found only in pigs up to 7 months old; infestation with other nematodes becomes more severe with the age of the host.—M.G.G.

HANSEN, M. F. & SHIVANI, G. A. (1956). Comparative morphology of infective nematode larvae of Kansas beef cattle and its use in estimating incidence of nematodiasis in cattle.—*Trans. Amer. micr. Soc.* **75**, 91-102. (1956). **504**

The genus and species of 3rd stage nematode larvae of beef cattle can be determined by a morphological study of pure and mixed cultures. The larval count is of value for the assessment of the degree of infection and the seasonal incidence of the parasites. In view of the ease and speed with which it can be carried out, the egg count is considered the method of choice for rapid survey work where identification of the parasites is not considered necessary.—T.E.G.R.

portion to the dry matter ingested. It was observed that at an environmental temperature fluctuating between 58° and 112°, with an average of 90°F., the intake was about the same as that at a constant temp. of 90°F.—T.E.G.R.

MACFARLANE, W. V., MORRIS, R. J. & HOWARD, B. (1956). **Water economy of tropical Merino sheep.**—*Nature, Lond.* **178**, 304-305. **509**

The water intake, output, and distribution of 60 young Merino sheep was studied over two summers and winters. It was shown that water for evaporative cooling by panting is provided in summer by drinking 12 times the winter water intake, and by reduction of urine to half the winter volume. Young sheep also stored 28% more extracellular water in summer than in winter. The Merino sheep approached the camel in power of water conservation but in contrast with the day to night change of rectal temp. over 4° to 7°C. found in the camel, there was a fluctuation of only 1.5° to 2°C. in the sheep. Adaptation to high heat loads and dehydration by Merino sheep involves insulation by wool against radiation, production of anti-diuretic substances in summer to help concentrate urine to 3 osmols, toleration of reduction of plasma volume to a half, and increase of plasma osmotic pressure to 440 m. osmols/litre.

—D. S. PAPWORTH.

BAUER, H. (1956). Die Wehenschwäche der Mutterschweine, infolge Mangelfütterung wie Konstitutionsschwäche, und ihre Beziehungen zu Totgeburten und Aufzuchtverlusten der Ferkel. [**Insufficient labour in sows resulting from nutritional deficiency, and its relationship to stillbirth and early death in piglets.**]—*Züchtungskunde*. **28**, 189-204. **510**

A discussion based on the literature and the author's experiences in pig breeding.—R.M.

RONÉUS, O. (1956). Colonicoprostatas—vanlig dödsorsak hos spädgris. [**Coprostasia of the colon—a common cause of death in piglets.**]—*Medlemsbl. Sver. VetFörb.* **8**, 332-333. [In Swedish.] **511**

A note on mechanical stoppage of the colon in week-old piglets by a plug, 3-4 cm. long, consisting of husks of chaff used as litter for the sows. Death had occurred in about 12 hours. R. had found 21 such cases at P.M. examination in the space of less than a year. In a number of cases perforation had occurred, resulting in varying degrees of peritonitis. He believed that the condition had not previously been described in the literature.—F.E.W.

DAYNES, G. (1956). **Bread and tears—naughtiness, depression and fits due to wheat sensitivity.**—*Proc. R. Soc. Med.* **49**, 391-394. **512**

D. described six human clinical case histories of a condition similar to canine

hysteria. In each case adherence to a gluten-free diet caused a rapid reversal of the condition.—D. S. PAPWORTH.

POUNDEN, W. D. (1956). **Rumen sampling—a diagnostic aid.**—*Vet. Sci. News, Univ. Wis.* **10**, No. 1. pp. 14-17. **513**

P. outlined the observations of a physical nature that can be made from the passage of the stomach tube, and the diagnostic information obtainable from the appearance and odour of the rumen sample and from examination of its micro-organisms. Wider use of rumen sampling as a diagnostic procedure could assist materially in improving and simplifying the differential diagnosis of various disorders of ruminants.—A. ACKROYD.

PHILLIPSON, A. T. & CUTHBERTSON, D. P. (1956). **Modern concepts of rumen digestion and metabolism.**—*Proc. 7th Internat. Congr. Zootech., Madrid*. Part 6. pp. 7-92. [In English. French, German and Spanish summaries.] **514**

A review.—D. S. PAPWORTH.

NICHOLS, R. E., DILLION, R. D., PENN, K., BRYANT, J. & SCHREIBER, J. (1956). **The apparent surface tension and relative viscosity of paunch fluid of cattle fed hay, fresh grass, or fresh legumes.**—*Vet. Med.* **51**, 389-390. **515**

The apparent surface tension and relative viscosity of rumen fluid were measured. These were influenced by feeding times, the kinds of feed, and watering. Different physical responses during digestion were obtained by feeding the same plant in different forms, e.g. fresh lucerne and lucerne hay.—T.E.G.R.

WILLIAMS, V. J. & CHRISTIAN, K. R. (1956). **Rumen studies in sheep. I. Variation in rumen microbial end-products in free-grazing sheep.**—*N. Z. J. Sci. Tech. Sect. A*. **38**, 194-202. **516**

Analyses of rumen samples from free grazing sheep during the spring and summer showed average values as follows: pH 6.6, total volatile fatty acid 10.4 millimoles per cent, ammonium nitrogen 23.2 mg.%, protein nitrogen 226 mg.% and free microbial count  $69 \times 10^6$  per cu. mm.—J. A. NICHOLSON.

OWEN, F. G., VOELKER, H. H., JACOBSON, N. L. & ALLEN, R. S. (1955). **The comparative effects of various antibiotics and an arsenical upon the growth, health, and certain blood constituents of dairy calves.**—*J. Dairy Sci.* **38**, 891-900. **517**



62 calves were used to examine the effects of 5 antibiotics and an organic arsenical administered during the first 12 weeks of life. All the supplements except penicillin, improved growth rate and food conversion rate. The blood cell count and the incidence of diarrhoea were apparently unaffected by the treatment.

—JOHN SEAMER.

BARTLEY, E. E., ATKESON, F. W., FRYER, H. C. & FOUNTAINE, F. C. (1956). **Effects of dietary arsanilic acid on the growth and well-being of young dairy calves.**—*J. Dairy Sci.* **39**, 989-991. **518**

Nine calves each received 50 mg. arsanilic acid daily from birth to 23 weeks of age. There was no difference in growth, food consumption or health between them and 9 control calves.

—M.G.G.

BOISSIER, J. -R. (1956). Action des isomères de la thiovaline sur la croissance du rat blanc. [Action of isomers of thiovaline on the growth of rats.]—*C.R. Acad. Sci., Paris.* **243**, 1172-1174. **519**

Thiovaline (methyl-3-thiol-3-amino-2-butyric acid) is a breakdown product of benzylpenicillin. The *d*-thiovaline isomer possessed the same promoting action on the growth of rats as the antibiotic. The laevorotatory isomer had an inhibitory action on growth, while a mixture of both isomers had no action.—R.M.

CONRAD, H. R., HIBBS, J. W. & POUNDEN, W. D. (1956). **Adsorption of rumen volatile fatty acids from the forestomachs of young dairy calves fed high roughage rations.**—*J. Dairy Sci.* **39**, 97-98. **520**

Volatile fatty acids were determined in samples of fluid from various parts of the alimentary tract of calves, 5-15 weeks old, slaughtered 4-6 hours after the morning feed. The highest concentration of acids was found in the rumen and caecum, the lowest in the abomasum. A higher proportion of acetic and a lower proportion of propionic and butyric acids were found in the abomasum and caecum than in the rumen. It was concluded that much of the absorption of fatty acids takes place from the omasum.—J. A. NICHOLSON.

FERRANDO, R., JOUANNEAU, J., ZWIGELSTEIN, G. & JACQUES, F. (1956). Délipidation des tourteaux et phénomènes de reproduction. [Extracted oilcakes and infertility in cattle.]—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 105-107. [In French. English summary.] **521**

Fifteen male and 15 female rats were fed a

basal ration including defatted casein which was replaced in the course of the experiment, which extended over 344 days, by extracted and expeller oil cake. Both males and females fed extracted cake showed damage to the genital organs (testicular degeneration, anoestrus) though reserves of vitamins A and E were raised. The deficiency was thought to be in unsaturated fatty acids. These observations are not considered to be of practical consequence in cattle husbandry, as the remainder of the ration must supply the deficiency inherent in the extracted cake.—F. L. M. DAWSON.

WOLFF, R. & BRIGNON, J. (1956). Action de la bétaine sur la stéatose hépatique d'origine alimentaire, chez le rat. [Curative action of betaine on hepatic steatosis of alimentary origin, in rats.]—*C. R. Soc. Biol., Paris.* **150**, 1001-1004. **522**

Small numbers of female rats in which steatosis had been induced by feeding for 14 days a 40% fat diet were further kept on this diet for 11 and 21 days, corresponding groups being fed daily in addition 0.23 g. betaine hydrochloride. In those which received betaine the mean total lipid content of the liver was 41 mg./g. at the 25th day and 46.7 mg./g. at the 35th day (as compared with 100 and 82 mg./g. respectively in the controls), and steatosis had disappeared except in one case, whereas it was severe in most of the controls.—F.E.W.

CHWOJNOWSKI, A. (1956). Wartość metody Sulkowitcha w oznaczaniu poziomu wapnia w krwi bydła. [Value of the Sulkowitch test for determination of the blood calcium content in cattle.]—*Méd. vét., Varsovie.* **12**, 554-556. [In Polish. English and Russian summaries.] **523**

From a study of the Sulkowitch test on 360 samples of cows' urine, C. considered that the results should be interpreted only on a herd basis. Negative results cannot be regarded as an indication for calcium therapy and the reading should be repeated after 24 hours. Neither the colour nor the transparency of urine have any influence on the results of the test, but the number of positive results increases with increasing specific gravity of the urine. Contrary to the observations of Detweiler & Martin [V.B. 20, 1024] C. found no correlation between the levels of calcium in the blood and urine of cattle.—M. GITTER.

ELAM, C. J., SCHNEIDER, B. H. & HAM, W. E. (1956). **Experimentally produced urinary calculi in sheep.**—*J. Anim. Sci.* **15**, 800-810. **524**

Eighty sheep were used to determine the effect of minerals and concentrates on the incidence of urinary calculi. The addition of potassium to the diet of 20 sheep resulted in 7 cases of calculi, whereas the addition of phosphorus caused only one case in 20. The addition of both K and P to the diet, either as potassium acid phosphate or as phosphoric acid and potassium carbonate, resulted in 28 cases out of 40 sheep. In 40 sheep receiving beet pulp there were 26 cases of calculi, as against 10 cases in 40 sheep receiving no beet pulp. The presence of beet molasses at about 11% of the diet had no effect on the occurrence of calculi. Out of 20 sheep receiving K, P and beet pulp, 19 developed calculi.—M.G.G.

GOLDBERG, A., WILLIAMS, C. B., JONES, R. S., YANAGITA, M., CARTWRIGHT, G. E. & WINTROBE, M. M. (1956). **Studies on copper metabolism. XXII. Hemolytic anemia in chickens induced by the administration of copper.**—*J. Lab. clin. Med.* **48**, 442-453. **525**

Fowls were given increasing doses of copper acetate *per os* (first week, 50 mg. Cu daily; second week, 75 mg. daily; followed by 100 mg. daily until anaemia or signs of toxicity appeared or the fowls died). Toxic symptoms (loss of weight, weakness, anorexia, lethargy) appeared after 2-6 weeks; in some cases these were associated with anaemia, with pallor of the comb, the liver showing evidence of erythrophagocytosis with haemosiderosis and copper deposition. Low ionic concentrations of copper caused haemolysis and agglutination of fowl, rabbit and human r.b.c. The authors suggest that in copper poisoning r.b.c. are destroyed in the liver by exposure to excessive amounts of the metal.—JOHN SEAMER.

SCHÜTZLER, G. & WIEDNER, W. (1956). **Der Serumeisenspiegel gesunder Pferde. [Serum iron in the normal horse.]**—*Mh. VetMed.* **11**, 265-268. **526**

Blood samples taken from healthy horses one hour after feeding showed an average serum iron content of 252.21  $\mu\text{g.}\%$  at rest and 222.9  $\mu\text{g.}\%$  at work. Blood samples taken one hour before the morning feed showed very constant fasting values, the average being 147.93  $\mu\text{g.}\%$ . In horses at work serum iron values were highest in the morning (250-350  $\mu\text{g.}\%$ ) and lowest in the evening (128-205.5  $\mu\text{g.}\%$ ).

—J. A. NICHOLSON.

RAMSAY, W. N. M. & CAMPBELL, E. A. (1956). **Some effect of oestradiol benzoate on iron metabolism in the immature pullet.**—*Quart.*

*J. exp. Physiol.* **41**, 271-274. [Authors' summary slightly modified.] **527**

The i/m injection of oestradiol benzoate (19 mg. in six 48-hourly doses) into pullets 12-14 weeks old caused a fall in blood haemoglobin and a large rise in plasma iron. An apparent increase in non-haem iron in the liver was noted.

COPE, E., GILLHESPY, R. O. & RICHARDSON, R. W. (1956). **Treatment of iron-deficiency anaemia. Comparison of methods.**—*Brit. med. J.* Sept. 15th. 638-640. [Authors' summary modified.] **528**

Ferrous succinate given orally was compared with a similar amount of iron given intravenously or intramuscularly for the treatment of hypochromic anaemia in pregnancy, in the puerperium, and in a third group of patients free from complications which would interfere with haemopoiesis. Ferrous succinate given orally was as effective as the other two treatments in all except a few refractory cases, but the response was less rapid in the antenatal cases and third group, though equally rapid in the post-partum cases. In 208 cases treated i/m there were no harmful side-effects. Cases refractory to oral iron responded satisfactorily to intramuscular iron. Intramuscular iron was as effective as intravenous iron, although it was not so rapid in the third group. In 82 cases treated i/v good responses were obtained in all except two which were abandoned owing to severe reactions.

MCDONALD, P. & JACKSON, T. H. (1956). **Application of magnesium sulphate to grass for silage as a means of preventing hypomagnesaemic tetany.**—*Proc. Brit. Soc. Anim. Prod.* 1955. pp. 109-114. [Authors' summary modified.] **529**

Two methods of applying magnesium sulphate to grass intended for silage were described. Spraying the grass before cutting was not highly successful because of rain. Spraying the cut herbage at the time of ensiling produced a silage of higher Mg content although losses occurred *via* the effluent. Cows given treated silage had higher blood Mg values than controls during the first month of feeding. The blood Mg values fell in all animals when they began to graze young grass in the spring, indicating that the treated cows did not store magnesium.

WATT, J. A. & BARLOW, R. M. (1956). **Microphthalmia in piglets with avitaminosis A as the probable cause.**—*Vet. Rec.* **68**, 780-783. [Authors' summary modified.] **530**

During a period of severe drought, and



under conditions where access to herbage was restricted, 11 gilts and a sow gave birth to 84 blind piglets, with microphthalmia. Only 42 were reared. The only other gilt to farrow in this period, and several sows which had access to green pastures, produced normal litters. Strong circumstantial evidence is presented to suggest that vitamin A deficiency was the cause.

DARLINGTON, F. C. & CHASSELS, J. B. (1956).

**A study on the breeding and racing of Thoroughbred horses given large doses of alpha tocopherol. I. Breeding experiments. II. Racing experiment.—Summary.** (*Shute Inst. Clin. Lab. Med. Canad.*) **8**, 1-10 & 11-20. **531**

A study of the breeding records of 34 brood mares, 5 older stallions at stud, and 2 stallions at stud for the first time was made after daily administration of  $\alpha$ -tocopherol succinate. It was claimed that the vitamin E therapy improved breeding performance. It was also claimed that the racing performance of animals was favourably influenced.—D. S. PAPWORTH.

BO, W. J. (1956). **The relationship between vitamin A deficiency and estrogen in producing uterine metaplasia in the rat.**—*Anat. Rec.* **124**, 619-627. **532**

Metaplastic changes were observed in the uterine epithelium of vitamin A deficient rats, but not in that of similar rats which had previously been ovariectomized. Following oestrogen administration to ovariectomized rats, pronounced metaplastic changes developed in the uterine epithelium. This suggests that oestrogens play a role in producing uterine metaplasia in vitamin A deficient rats.—J. A. NICHOLSON.

DINNING, J. S., SIME, J. T. & DAY, P. L. (1956). **An increased incorporation of P<sup>32</sup> into nucleic acids by vitamin E-deficient rabbits.**—*J. biol. Chem.* **222**, 215-217. [Authors' summary copied *verbatim*.] **533**

Vitamin E deficiency in the rabbit leads to a marked increase in the incorporation of P<sup>32</sup> into tissue nucleic acids.

ANDERSON, G. W., SLINGER, S. J. & COUCH, J. R. (1956). **Coliforms as related to the hemorrhagic syndrome.**—*Poult. Sci.* **35**, 933-936. **534**

The authors investigated the effect of feeding a penicillin resistant strain of *Bact. coli* to chicks in which the haemorrhagic syndrome had been induced by the use of a diet deficient in vitamin K. There was a marked reduction of the blood clotting time and in the severity of the haemorrhagic lesions. On the basis of the effect on

blood clotting time it appeared that the coliform culture was a source of vitamin K but that at the concentrations used it was less effective than the addition of 5 mg. of menaphthone ("menadione") per lb. of diet. The coliform culture was, however, more effective than menaphthone in reducing the severity of lesions. It is suggested that this effect was, in part at least, due to some factor other than vitamin K.

—S. BRIAN KENDALL.

MILLER, R. F., NORRIS, L. C. & HEUSER, G. F. (1956). **The vitamin B<sub>12</sub> requirement of White Leghorn chicks.**—*Poult. Sci.* **35**, 342-349. **535**

When hens were given sufficient vitamin B<sub>12</sub> for 63% hatchability of fertile eggs, their chicks required not more than 0.25  $\mu$ g. of the vitamin per 100 g. of diet. When hens received enough for 83% hatchability, their chicks needed not more than 0.125  $\mu$ g. per 100 g. of diet containing 194 calories and not more than 0.16  $\mu$ g./100 g. of diet containing 234-242 calories.—M.G.G.

GERRIETS, E. & WERNER, C. (1956). **Kombinationstherapie mit Folsäure und Vitamin B<sub>12</sub> bei spontaner B-Avitaminose von Leghornküken. [Combined therapy with folic acid and vitamin B<sub>12</sub> in vitamin B deficiency in chicks.]**—*Berl. Münch. tierärztl. Wschr.* **69**, 273-275. [English summary.] **536**

Ten chickens (5 weeks old) out of a batch of 60 reared on barley meal and a commercial chick food, with vitamin supplements excluding those of the B group, developed severe symptoms resembling those of riboflavin deficiency, including bent leg and curled toe. While maintained on the same diet they were treated *per os* with 1.5 mg. folic acid and 25  $\mu$ g. vitamin B<sub>12</sub> daily; after 7 days they recovered clinically.

—W. G. SILLER.

JOVANOVIĆ, M., PANTIĆ, V. & MARKOVIĆ, B. (1956). **Goitre enzootique du cheval en Yougoslavie. [Endemic goitre of horses in Yugoslavia.]**—*Rec. Méd. vét.* **132**, 594-598. **537**

Horses were examined on several premises in a region of endemic goitre. The incidence ranged from 2%–10%, and was lower in foals than in adult horses. It appears that imported horses are more susceptible than the native animals. Effects are reduced capacity for work, loss of libido, stillbirths, and low milk yield. Diffuse colloid goitre was commonest. One case of parenchymatous nodular goitre was seen, and one of exophthalmic goitre.—M.G.G.

LÜBKE, A. (1956). Experimenteller Beitrag zum Hitzekollaps thyreotoxischer Mäuse. [Experimentally induced heat collapse of thyrotoxic mice.] — *Dtsch. tierärztl. Wschr.* 63, 171-173. 538

It has been suggested that latent liver dystrophies may become apparent following some disturbances of the circulation. Mild liver dystrophy was set up in mice by feeding thyroid tissue, and disturbance of the circulation was then produced by warming the mice. It was found that the sensitiveness to heat collapse corresponded to the degree of thyrotoxicosis and appeared to be determined by the extent of the liver changes.—J. A. NICHOLSON.

HALL, P. F. & MYANT, N. B. (1956). Passage of exogenous thyroxine and of iodine between mother and foetus in pregnant rabbits.—*J. Physiol.* 133, 181-193. 539

$^{131}$ I-labelled thyroxine was injected i/v into pregnant rabbits and the ratio of the concentration in the blood serum of the dam and of the foetuses examined. Results suggested that the tissues between the mother and foetus are almost impermeable to exogenous thyroxine up to about the 19th day of pregnancy, but thereafter become more permeable. It was confirmed that the concentration of radioiodine in the foetal serum exceeded that in the dam when radioiodide was injected after the 17th day of pregnancy.—D. S. PAPWORTH.

FELL, H. B. & MELLANBY, E. (1956). The effect of L-triiodothyronine on the growth and development of embryonic chick limb-bones in tissue culture.—*J. Physiol.* 133, 89-100. 540

The effect of L-tri-iodothyronine (TIT) on the explanted limb-bone rudiments: femur, tibia, humerus, radius and ulna, of  $5\frac{1}{2}$  to 6-day-old chick embryos was studied and compared with that of L-thyroxine (T). The histological changes produced in the shaft by TIT severely inhibited growth in the rapidly developing femur and tibia, the general effects being qualitatively indistinguishable from those of T. In a given concentration the inhibitory effect of TIT on the growth rates of the femora and tibiae was about 4 times that of T.—D. S. PAPWORTH.

MEINEKE, H. A. & CRAFTS, R. C. (1956). A study of the anemia induced by hypophysectomy and that induced by combined thyroidectomy and adrenalectomy in Wistar, Long-Evans, and Sprague-Dawley rats.—*Anat. Rec.* 124, 47-66. 541

The object of the study was to clarify conflicting views of humoral effects on erythro-

poiesis. The rats were examined—at 10-day intervals for 60 days after surgery and then killed and examined P.M. Total and differential blood cell counts were made from femoral bone marrow and sections examined histologically. The responses of all three strains were, in general, similar. Hypophysectomy produced a slightly microcytic hypochromic anaemia with decreased erythroid elements in the bone marrow and increased fat. Combined thyroidectomy and adrenalectomy produced a normocytic normochromic anaemia with increased myeloid elements in the bone marrow and a slight decrease in erythroid elements.—JOHN SEAMER.

EVELETH, D. F., BOLIN, F. M. & BUCHANAN, M. L. (1956). Abnormal shape of the heart of dwarf cattle.—*Vet. Med.* 51, 495. 542

In many cases of dwarfism in cattle the heart is almost spherical, resembling that in infants born to diabetic mothers. Glucose tolerance tests indicate that dwarf cattle are diabetic.—M.G.G.

BODA, J. M. (1956). Further studies on the influence of dietary calcium and phosphorus on the incidence of milk fever.—*J. Dairy Sci.* 39, 66-72. 543

Field trials confirmed [see also *V.B.* 24, 2867] that feeding a low-calcium high-phosphorus diet during the last 2-3 months of pregnancy lowers the incidence of milk fever in susceptible dairy cattle. Satisfactory weight gains were obtained with a basic diet of oat hay and concentrate mixtures, the additional phosphorus being provided by the addition of 1.5% to 5% of monosodium phosphate to the basic ration.—J. A. NICHOLSON.

BIENFET, V. (1956). L'acétonémie de la vache laitière. [Ketosis in dairy cows.] — *Ann. Méd. vét.* 100, 368-429. [English and Flemish summaries.] 544

A general review with 70 references.

—T.E.G.R.

GESSERT, R. A. (1956). New developments in ketosis therapy.—*Mich. St. Coll. Vet.* 16, 167-168 & 199. 545

In cattle with ketosis, a rapid clinical response followed treatment with 0.5-1.5 g. of hydrocortisone alcohol. Hydrocortisone acetate when administered after a small dose of hydrocortisone alcohol gave good results, but alone it was less effective. "Meticorten" (metacortandracin) in dosage of 500 mg. gave good results in the few cases in which it was used. It possessed longer acting properties than hydrocortisone alcohol. "Fludrocortisone" (9 $\alpha$  fluoro-



hydrocortisone acetate) in dosage of 100 mg. gave as good clinical results as hydrocortisone alcohol and at this dosage no toxicity was observed. Calcium lactate, 2 lb. followed by  $\frac{1}{2}$  lb. twice daily for 6-8 days, also proved a very effective agent. It can be administered with the feed or, after dissolving it in hot water, by drench or stomach tube.—A. ACKROYD.

VIGUE, R. F. (1956). Use of prednisone in bovine ketosis.—*J. Amer. vet. med. Ass.* **129**, 234-237. **546**

Delta<sup>1</sup>-dehydrocortone was administered parenterally to 13 cows with ketosis. The optimum dose was between 200 and 400 mg. It is considered that this drug is more potent than either cortisone or hydrocortisone and produces a better glycogenic effect than adrenocorticotrophic hormone, cortisone or hydrocortisone.—T.E.G.R.

I. JÖNSSON, G. & ROSENDAHL, P. G. (1956). Behandlingen med kloralhydrat vid acetone-mi. [**Chloral hydrate in ketosis.**]—*Medlemsbl. Sver. VetFörb.* **8**, 265-266 & 268. [In Swedish.] **547**

II. HALLGREN, W. & JÖNSSON, G. (1956). Behandling med kloralhydrat vid acetone-mi. [**Treatment with chloral hydrate in acetone-mi.**]

mi.].—*Ibid.* **350**. [In Swedish.] **548**

I. Propionates are not always effective, and both cortisone and adrenocorticotrophic hormone are expensive; chloral hydrate treatment remains a useful addition to present methods.

II. A note emphasizing that chloral hydrate therapy is recommended [see I above], not as a substitute for sodium propionate, but as a complementary measure in unresponsive cases.—F. R. PAULSEN.

SWAN, J. B. & JAMIESON, N. D. (1956). Studies on metabolic disorders in dairy cows. I. Diagnostic methods and a survey of clinical cases of ketosis, milk fever, and lactation tetany in New Zealand cows.—*N. Z. J. Sci. Tech.* Sect. A, **38**, 137-151. **549**

An attempt was made to correlate clinical symptoms with the results of blood analyses in a number of metabolic disorders in cattle, particularly milk fever, grass staggers and ketosis. It was concluded that in many cases an accurate diagnosis of the blood picture cannot be made from the usual clinical data given, but by taking into consideration such additional data as past history, feeding, age, milk yield, etc. the accuracy of the diagnosis can be greatly increased.—J. A. NICHOLSON.

See also abst. 647 (tables of amino acids in foods and feeding stuffs).

## DISEASES, GENERAL

WINTER, (1956). Der Mensch als Infektionsquelle der Tiere. [**Man as a source of infection for livestock.**]—*Mh. VetMed.* **11**, 371-375. **550**

The literature is reviewed on the possible transmission of the following diseases from man to animals: pox diseases, poliomyelitis and influenza; T.B., diphtheria, brucellosis, syphilis, bacillary dysentery, and streptococcal, leptospiral and *Salmonella paratyphi B* infections; *Entamoeba histolytica* infection; *Taenia saginata* infestation; and *Trichophyton* and *Microsporon* infections.—M.G.G.

HEISCH, R. B. (1956). Zoonoses as a study in ecology with special reference to plague, relapsing fever, and leishmaniasis. — *Brit. med. J.* Sept. 22nd. 669-673. [Author's summary modified.] **551**

The zoonoses, which are defined as infections of man naturally acquired from other vertebrates, are treated as a problem in ecology. This entails studying the interrelation between man, animals, a causative organism, the

environment, and sometimes arthropods. Such an approach is holistic or synecological—wholes being regarded as more important than parts. Holism is a dynamic not a static conception. The evolution of the zoonoses is discussed, particularly in relation to plague, relapsing fever, and leishmaniasis. The most important reservoirs of zoonoses and other parasitic infections are usually resistant or relatively insusceptible animals. Plague and Chagas' disease illustrate this. Resistant and unduly susceptible animals occupy different niches in nature. Zoonoses often have a focal distribution. Thus wild rodents infected with plague may occur in pockets, and the vector mites of scrub typhus congregate in typhus islands. An unstable environment often favours the transference of zoonoses to man and animals. Examples are the plague-infected plain of Rongai, in Kenya, the typhus-infected forest clearings in Malaya, and the yellow-fever infected forest edges in Uganda. Ecologically unstable areas are termed ecotones. Zoonoses can also be transmitted in or near relatively stable sites such as huts;

rodent burrows, caves, and termite hills. These are known as habitat niches. The importance of food chains is discussed in the transference of zoonotic infections. Reference is also made to the effect of fluctuations in the animal population. Certain highly susceptible rodents are periodically decimated by plague; this breaks the link with man, and human infections cease for the time being.

SCHULZE, J. (1956). Zur Definition der Stabkernigen beim Pferde. [Definition of unsegmented neutrophile leucocytes in horses.] — *Mh. VetMed.* 11, 203-205. 552

The segmentation of neutrophile granulocytes in the horse is not as clearly defined as it is in man, and variations in the number of these cells under pathological conditions are often difficult to assess. S. suggested a definition of unsegmented neutrophile leucocytes by subdivision into rough forms, normally present in abundance, and immature, smooth forms which, in his observations, appeared in increased numbers under various pathological conditions. Both cell forms are described in detail and illustrated in a coloured table. Their recognition by means of other characteristics of the nuclei and the protoplasm is also described.

—F. K. LEEB.

PAPP, E. (1956). A lovak tendogen eredetű mankósállásának gyógykezelése helyileg alkalmazott hyaluronidaseval. [Hyaluronidase in treatment of contracted tendons in horses.] — *Mag. állator. Lapja.* 11, 303-305. [In Hungarian. English and Russian summaries. Abst. from English summary.] 553

Hyaluronidase, applied locally, and surgical shoeing effected a cure in 3 out of 4 horses with contracted tendon.

HOLZMANN, E. (1954). Bilirubinbestimmung im Blut gesunder und kranker Rinder. [Determination of bilirubin in the blood of healthy and diseased cattle.] — *Inaug. Diss., Hanover.* pp. 40. 554

Based on examination of serum bilirubin levels in 103 clinically healthy cattle and 107 cattle with various metabolic, puerperal, parasitic and bacterial diseases and foreign body syndrome, H. stated that bilirubin values may be of limited value in the differential diagnosis of some liver conditions and in the estimation of the part played by the liver in certain diseases. Not too great an importance should, however, be attached to the diagnostic value of serum bilirubin values in actual diseases of the liver, since damage to the parenchyma must be considerable to affect bilirubin levels.—E.G.

JARRETT, W. F. H. (1956). The pathology of some types of pneumonia and associated pulmonary diseases of the calf.—*Brit. vet. J.* 112, 431-452. 555

Several types of diseases of the lungs in calves are described and a classification of pulmonary diseases, on a morphological basis, is suggested.—T.E.G.R.

VERGE, J., GORET, P. & PARAF, A. (1956). Phénomènes de Reilly-Selye chez le porc. [The adaptation syndrome and stimulation of the sympathetic nervous system in diseases of the pig.]—*Bull. Acad. vét. Fr.* 29, 27-32. 556

Mortality of young pigs during 4-5 weeks after weaning is discussed. In a litter it may be from 20-80%. There are no characteristic clinical manifestations and P.M. findings are grouped into 4 main classes:—haemorrhagic or congestive gastro-enteritis; oedema disease; exudative peritonitis, pericarditis or pleurisy; congestion of the meninges with or without cerebral oedema. Mixed forms are also sometimes encountered. The aetiology is obscure but weaning, with a consequent nutritional imbalance; neuro-hormonal influences, ascarid infestation, which is very common and, possibly, latent viruses are suspected of playing a contributory role. Treatment with sulphonamides or antibiotics is ineffective but good results are claimed for promethazine and terramycin in combination. It is considered that adrenocorticotrophic hormone therapy will have wide application in this field.—T.E.G.R.

BUGEAC, T., BERBINSCHI, C., CRISTESCU, M. & SOLNITZKY, A. (1956). Studii asupra rinitei atroifice infecțioase a porcului in R.P.R. [Porcine atrophic rhinitis in Roumania. I.] — *Anu. Inst. Pat. Igien. anim.* 6, pp. 47-73. [In Roumanian. Abst. from French summary pp. 274-275.] 557

The disease was first detected in Roumania in 1954. It was studied in 9 breeding units, in 13,118 pigs (1,415 sows, 149 boars, 4,652 gilts and young boars up to 2 months old, 6,309 piglets aged 3-6 months and 595 aged 6 months and over). Clinical atrophic rhinitis was found in 348 young pigs and in 119 adults. It occurred in each litter born during a year in an affected herd; outbreaks were a function of conditions of husbandry and feeding. Bacteria isolated from the nasal discharge were: *Pseudomonas pyocyanea* 47.3%, spore bearing Gram-positive organisms 37.4%, *Bact. coli* group 13.4%, diplococci 12.4%, Gram-negative organisms 9.3%, *Fusiformis necrophorus* 7.3%, *pasteurella* 7.2%, streptococci 4.7%, *Corynebacterium*



*pyogenes* 4.5%; trichomonads were present in 35.2%. Piglets, 14 days old, inoculated with cultures of these organisms remained healthy, but piglets aged 2-5 days developed the disease after inoculation with nasal discharge from affected pigs. Carriers not detectable by present methods of diagnosis can transmit the disease by direct or indirect contact.—F.E.W.

SHUMAN, R. D. & EARL, F. L. (1956). Atrophic rhinitis. VII. A study of the economic effect in a swine herd.—*J. Amer. vet. med. Ass.* **129**, 220-224. **558**

The herd history indicated that the disease had been present for about 3 years before it was suspected. The incidence during the survey period was 45.9%. Infection inhibited growth progressively with age from 56 days onwards, and had no marked adverse effect on sow productivity.—T.E.G.R.

I. TURBES, C., RICHARDS, A. B. & ABREU, B. E. (1956). Changes in the cerebellum in newborn pigs, showing tremor.—*Anat. Rec.* **124**, 376. **559**

II. STROMBERG, M. W. (1956). Observations on a nervous condition of baby pigs.—*Ibid.* **443**. [Authors' absts. modified.] **560**

I. The only abnormality in the cerebellum of piglets with tremor of unknown aetiology consisted of pigment infiltrations in Crus I, Crus II and the paramedian lobes. Histologically, pigment cells were located perivascularly in the layer of Bermann, the molecular and granular layers, and the intracerebellar nuclei. At times a more generalized "amorphous" degeneration of the Purkinje cells was observed in the areas related to extensive collections of pigment.

II. Trembling in new-born piglets seemed to depend on an abnormal response to temp. change, because lowering the environmental temp. or feeding cold liquids accentuated the trembling. Conversely, heat seemed to alleviate the condition. Environmental cooling led to the onset of tremor in piglets which appeared to have fully recovered when kept at room temp. Adrenaline, but not nor-adrenaline, provoked tremor in apparently normal piglets which had recovered from it. Animals partly recovered reacted to auditory stimuli with bursts of tremor. Further work is in progress.

JORDAN, F. T. W. (1956). A survey of poultry diseases in mid-Wales.—*J. comp. Path.* **66**, 197-216. **561**

The survey covered 32 farms comprising about 11,000 chicks and 1,500 adult birds. P.M. examination was made of 2,118 carcasses from these flocks and of 2,341 other carcasses sent

from other sources for routine diagnosis. The commonest causes of mortality among survey flocks were: accident and injury (20%); chilling (18%); tumours (16.5%); and caecal coccidiosis (11%). Among non-survey birds the commonest causes of mortality were: tumours (19%); caecal coccidiosis (10%); fowl typhoid (8%); and reproductive disease (8%).—T.E.G.R.

REIS, J. & NÓBREGA, P. (1955). Doenças de aves em São Paulo. Análise de 17.753 casos. [Diseases of birds in São Paulo. An analysis of 17,753 cases.]—*Arch. Inst. biol. (Def. agric. anim.)*, S. Paulo. **22**, 119-160. **562**

Among the 17,753 diseased birds examined between 1930 and 1953 were 15,549 domestic fowls, 560 turkeys, 310 pigeons, and 1,334 belonging to more than 21 wild species. Coccidiosis was the commonest finding (2,888 cases). Next, in order, were helminth infestation (2,243 cases); the leucosis complex (1,417); spirochaetosis (1,154); fowl cholera (1,060); coryza (1,024); gout (916); diseases of the reproductive system (848), respiratory system (835) and digestive system (827); *Salmonella pullorum* infection (770); fowl pest (461); blackhead (418, of which 195 were turkeys); fowl typhoid (325); arthropod parasites (322); tumours (193, of which 93 were malignant tumours of epithelial tissue); rickets (185). Thirty-six other diseases had an incidence of less than 1%.—R.M.

QUASTLER, H. (1956). The nature of intestinal radiation death.—*Radiation Res.* **4**, 303-320. **563**

In death following irradiation of the intestine in mice, it was observed that: the dose was 1-10 kr; survival time was 3-5 days, according to species and other cond'tions, but it was almost always constant with the dose; the small intestine was the site of the ensuing lesion, which consisted of exfoliation of the epithelial lining. The histological changes in the lesion are described. Death is probably due to the action of proteolytes; bacteraemia is not considered a major factor.—T.E.G.R.

WEEKS, M. H., KATZ, J., OAKLEY, W. D., BALLOU, J. E., GEORGE, L. A., BUSTAD, L. K., THOMPSON, R. C. & KORNBERG, H. A. (1956). Further studies on the gastrointestinal absorption of plutonium.—*Radiation Res.* **4**, 339-347. **564**

In prolonged feeding experiments with a Pu (IV) nitrate soln. at pH2 the conc. of Pu in the soln. (between  $10^{-5}$   $\mu\text{g./ml.}$  and 1  $\mu\text{g./ml.}$ ) had no effect on the fraction absorbed from the

gastro-intestinal tract of rats; the average absorption was 0.0028%. In single dose experiments on 3 pigs absorption averaged 0.0022%. Absorption increased with the acidity of the soln. and when Pu(VI) was used. When administered to rats by stomach tube the rate of excretion in the urine was 20% during the first 9 days. Less than 1% of Pu remained in the gastro-intestinal tract of rats 2 days after feeding.—T.E.G.R.

HJÄRRE, A. (1956). Ein Beitrag zur Kenntnis des Bindegewebes und seiner pathologischen Veränderungen. [**Connective tissue and its pathological changes.**] — *Mh. VetMed.* **11**, 241-245. **565**

A detailed description of the morphology, physiology and biochemistry of connective tissue with particular reference to the influence of enzymes (hyaluronidase, chondromucase), vitamins (ascorbic acid), and hormones (cortisone, adrenocorticotrophic hormone, thyrotrophine and oestrogens) on its normal structure and function; together with an account of two

See also absts. 644 (book, animal diseases in South Africa); 645 (yearbook, U.S. Department of Agriculture); 646 (book, veterinary clinical diagnosis); 649 (African veterinary handbook).

## POISONS AND POISONING

I. SONODA, M., NAKAMURA, R., TOO, K. & MATSUHASHI, A. (1956). **Clinical studies on mercury poisoning in cattle.** — *Jap. J. vet. Res.* **4**, 5-16. [In English.] **568**

II. FUJIMOTO, Y., OHSHIMA, K., SATOH, H. & OHTA, Y. (1956). **Pathological studies on mercury poisoning in cattle.**—*Ibid.* 17-32. [In English.] **569**

I. A clinical and experimental investigation was made of 29 cases of mercury poisoning amongst dairy cattle after feeding on linseed meal which had been treated with a mercurial fungicide. Of 171 animals fed the contaminated linseed, 29 developed symptoms, and 10 of these died or were slaughtered. Outstanding symptoms were a decline in milk secretion, bronchial catarrh, salivation, diarrhoea and cardiac disturbances. It was also found that there was an increase of serum glucose.

II. The authors described the pathology and histopathology of 10 cases of mercury poisoning in dairy cows, and two experimental cases.—D. S. PAPWORTH.

MILLER, R. F. & PHILLIPS, P. H. (1956). **The effect of age on the level and metabolism of fluorine in the bones of the fluoridated rat.**—*J. Nutr.* **59**, 425-433. [Authors' summary modified.] **570**

types of lesion—mucous oedema and fibrinoid degeneration (fibrinoid necrosis)—which are characteristic degenerative processes of connective tissue.—F. K. LEEB.

BROUWERS, J. (1956). Le rôle du système nerveux en pathologie générale. [**The role of the nervous system in diseases of livestock.**] — *Ann. Méd. vét.* **100**, 245-270. **566**

A general discussion of the functions of the hypothalamus and its role in physiological disorders culminating in dysfunction or in disease. —T.E.G.R.

ELLIS, J. T. (1956). **Necrosis and regeneration of skeletal muscles in cortisone-treated rabbits.** — *Amer. J. Path.* **32**, 993-1013. [Abst. from author's summary.] **567**

Rabbits given large amounts of cortisone acetate for 7 to 25 days developed extensive necrosis and regeneration of the skeletal muscle fibres. Complete restitution occurred after treatment was stopped. The cardiac muscle and involuntary muscles were apparently unaffected.

Fluorine deposition in the femur was greater in young than in adult rats and concentration (of fluorine) in both young and adult rats progressed with time. Fluorine was mobilized when the intake was low. When saturation point was reached bone changes occurred which prevented further fluorine intake.

ANON. (1956). **Poison from the air.**—*Fmg S. Afr.* **32**, No. 5, p. 5. **571**

The spraying of fruit with parathion as a protection against attack by birds is not considered dangerous for human beings provided that spraying ceases 3-4 weeks before harvesting. Over 80% is eliminated from treated vegetation within 8 days, and over 98% within 6 weeks.—M.G.G.

RATH, U. (1955). **Ricin poisoning of cattle.**—*Refuah vet.* **12**, 401-402. In Hebrew. [In English p. 463.] **572**

The general literature on ricin poisoning is discussed, with 10 references, and a case history presented which involved the poisoning of a herd of 36 cows and heifers, 14 of which had to be slaughtered. It is observed that the general clinical picture of poisoning due to ricin is similar to that produced by castor oil seed.

—D. S. PAPWORTH.



FLIGHT, C. H. (1956). **Lupinosis in sheep.**—*Eng S. Afr.* **32**, No. 5. pp. 37-39. **573**

Lupinosis is a deficiency disease in sheep and especially lambs up to one year old which have fed exclusively on ripe lupin seeds. P.M. examination reveals an abnormally small, hard liver. Lupin seeds are poor in methionine, vitamins A and E, and copper. The condition is prevented by providing supplementary food.  
—M.G.G.

KATHEIN, R., NAGEL, N. & KRUMHOLZ, D. (1956). [Nitrate poisoning in cattle through *Silybum marianum*.]—*Refuah vet.* **13**, No. 1. In Hebrew pp. 4-6. [Abst. from English summary p. 50.] **574**

Of 11 cattle affected, 8 had to be slaughtered. The variegated "milk thistle", *S. marianum* was considered, on circumstantial evidence, to have been the cause, and laboratory findings were consistent with this opinion. Mention is made of a further similar incident involving 4 cattle in another village.—F.E.W.

KNAPP, W. A., JR. & FLOWERS, H. H. (1956). **Treatment of poisonous snakebite in the dog with cortisone acetate.**—*Vet. Med.* **51**, 475-478. **575**

The minimum lethal s/c dose for dogs of the dried venom of *Agkistrodon piscivorus* is about 1 mg./lb. body weight. Cortisone acetate in an i/m dose of 50 mg., followed by 6 doses of 25 mg., one every 8 hours, had a favourable influence on dogs injected with the venom.  
—M.G.G.

WIGDERSON, F. J. (1956). **Accidental caffeine poisoning in a dog.**—*J. Amer. vet. med. Ass.* **129**, 233. **576**

A 4-month-old puppy swallowed tablets containing about 3.5 g. of caffeine. Two hours later it was in a state of collapse with muscular spasms. The temp. was 104°F., the pulse weak and rapid, the mucous membranes pale, the pupils dilated and the corneal reflex weak. Pentobarbitone sodium (3 ml.) was administered i/p, but the patient died before further treatment could be attempted.—T.E.G.R.

GENELLY, R. E. & RUDD, R. L. (1956). **Chronic toxicity of DDT, toxaphene, and dieldrin to ring-necked pheasants.**—*Calif. Fish Game.* **42**, 5-14. **577**

Toxicity trials were carried out over varying periods up to 94 days. In females D.D.T. was toxic for 3 out of 10 at 660 p.p.m. within 57 days, for 1 out of 10 at 200 p.p.m. after 90 days. It was toxic for all of 4 males at 400 p.p.m. while 20 females survived. Toxaphene fed to 33 birds (including 3 cocks) at 300 p.p.m. for 2-3 months was not toxic. Dieldrin was more toxic than D.D.T. Mortality among hens was: 6 out of 10 at 200 p.p.m. within 28 days; 5 out of 10 at 100 p.p.m. within 38 days; and 8 out of 20 at 50 p.p.m. within 74 days (this dose was fatal for all of 4 males). At 25 p.p.m. the only male under test died while all of 21 females survived. With toxaphene and with dieldrin there was loss of weight in proportion to the dose while with D.D.T., most of the birds gained and maintained weight. P.M., there was a high conc. of insecticide in the fat and/or marked liver damage in all the birds. It is suggested that toxaphene in conc. higher than 2 lb./acre as a spray of 6 lb./acre as a powder should be considered toxic.  
—T.E.G.R.

## PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease).

NIKITIN, E. E. (1956). [Effect of the transfusion of blood or blood substitute on the composition of peripheral blood of cattle.]—*Veterinariya, Moscow.* **33**, No. 8. pp. 34-35. [In Russian.] **578**

Transfusion of whole blood, fresh or dried serum, or the "therapeutic" serum described by Belenki [*V.B.* **26**, 3644], all had the same action on the morphology of the peripheral blood. When these substances were administered i/v in small doses (1-2 ml./kg. body wt.) or medium doses (3-4 ml./kg. body wt.), as is recommended for the purpose of "stimulating" the animal to higher production, there was increased leucocytosis and no harmful effects

were observed. Larger doses (6-8 ml./kg. body wt.) led to transient leucopenia, fall in blood pressure, and general depression.—R.M.

EARL, A. E. (1956). **Reserpine (serpasil) in veterinary practice.**—*J. Amer. vet. med. Ass.* **129**, 227-233. **579**

An account of the pharmacology, toxicology and clinical uses of the drug in veterinary practice. It is considered that reserpine can be of value in calming highly nervous or abnormally responsive animals.—T.E.G.R.

HANSSON, C.-H. (1956). **Succinylcholine iodide as a muscular relaxant in veterinary surgery.**—*J. Amer. vet. med. Ass.* **128**, 287-291. **580**

When used as a muscle relaxant for casting a horse, succinylcholine iodine was administered i/v at a dosage of 0.18 mg./kg. body wt. for Thoroughbreds and 0.13 mg./kg. for draught horses. A sedative dose of pentobarbitone sodium was always given i/v before the relaxant, in order to avoid excitement of the animal. The horse fell about a minute after inj., and complete muscular relaxation lasted for about 5 min. H. used this method for successfully casting 500 horses at the Royal Veterinary College of Sweden.

For cattle the dosage was 0.02 mg./kg. body wt., again preceded by a sedative dose of pentobarbitone. Larger doses were liable to arrest respiration. If this happened, the oesophagus was blocked by an inflatable tube and artificial respiration was carried out until the effect of the drug wore off. For dogs, the minimum dosage was 0.067 mg./kg. body wt., combined with thiopentone-trichlorethylene narcosis.—R.M.

GEDROYĆ, M. (1956). Zmiana właściwości biochemicznych krwi jako czynnik rozpoznawczy wstrząsowego działania niektórych leków i trucizn (działanie uboczne leków i krew konserwowana). [**Biochemical changes in the blood caused by some shock-inducing drugs and poisons.**] — *Med. vét., Varsovie*. 12, 486-489; 556-561. [In Polish. English and Russian summaries.] 581

G. studied a group of drugs and their influence on the blood constituents *in vitro*. Sulphonamides, *p*-aminobenzoic acid, benzoic acid, salicylic acid and *p*-aminosalicylic acid cause serious changes in the blood constituents. Blood becomes brown, r.b.c. are hydrolysed and precipitated, agglutination reactions are changed and r.b.c. are agglutinated by homologous sera and even by their own sera. "Rivanol" [ethoxy diaminoacridine lactate] causes changes similar to those produced by sulphonamides. Procaine hydrochloride—a derivative of *p*-aminobenzoic acid—readily penetrates the cellular membrane of the r.b.c. and produces the same changes as *p*-aminobenzoic acid and although valuable as an anti-allergic drug it is often misused. Antistin as an anti-histamine and anti-allergic drug has a similar action to procaine HCl. It does not, however, enter into chemical reactions with histamine bodies and even less with antibodies or antigens; it becomes adsorbed by cells, particularly by r.b.c., causes their hydrolysis and change in agglutination reactions, even in therapeutic doses. Both procaine HCl and

antistin induce symptoms of shock in certain cases.—M. GITTER.

HUNTER, R. B. & WALKER, W. (1956). **Anticoagulant action of neodymium 3-sulphoisonicotinate.**—*Nature, Lond.* 178, 47. 582

With intravenous doses of neodymium 3-sulphoisonicotinate of the order of 5 mg./kg. in man and rabbits, there was an impairment of intrinsic blood thromboplastin generation. This was apparently due to the inhibition in circulating blood of two thromboplastin constituents normally present in serum, namely Christmas factor (PTC, factor IX) and factor X. There was also a reduction in the activity of factor VII (SPCA, stable factor). These effects were observed for up to 24 hours. With larger doses up to 50 mg./kg. the whole-blood clotting time was greatly prolonged.—D. S. PAPWORTH.

HERTER, R. (1956). Zur Frage der Überempfindlichkeit der Tierärzte gegen Antibiotika. [**Hypersensitivity of veterinary surgeons to antibiotics.**]—*Dtsch. tierärztl. Wschr.* 63, 365-366. 583

Of 1,301 veterinary surgeons who replied to a questionnaire, 75 (5.8%) stated that they were hypersensitive to antibiotics; 13 of these had never been treated with antibiotics.

—M.G.G.

DUCROT, R., LEAU, O. & COSAR, C. (1956). **Protective action of pantothenic acid against toxic effect of streptomycin and dihydrostreptomycin.**—*Antibiot. & Chemother.* 6, 404-410. [Spanish summary p. 427.] 584

An account of a comparative study in mice, rats and cats. Pantothenic acid appeared to be effective in the prevention of auditory impairment in rats subjected to a lengthy treatment with either antibiotic. It also appeared effective to a lesser degree in the prevention of vestibular disturbances in cats.—D. S. PAPWORTH.

BIERSCHWAL, C. J. & UREN, A. W. (1956). **The absorption of chlortetracycline (aureomycin) by the bovine uterus.**—*J. Amer. vet. med. Ass.* 129, 373-374. [Authors' summary modified.] 585

Aureomycin is rapidly absorbed into the blood stream after infusion into the lumen of the uterus. Greatest aureomycin activity in the blood serum occurs approx. 2 hours after infusion. A higher level of activity is found in the blood serum during the first 24 hours after intravenous than after intra-uterine administration.



MÜLLER, L. F., TÜTZER, G., FISCHER, S. & DANGSCHAT, O. (1956). Untersuchungen über den Penicillin-Blutserumspiegel beim Schwein. [The penicillin serum level in pigs.] —*Berl. Münch. tierärztl. Wschr.* **69**, 362-364. [English summary.] **586**

Penicillin in various forms was injected into young pigs and the blood-level determined by Fleming's capillary method and by a modification of Fleming's hole-plate method. With alkaline salts of penicillin bactericidal levels of over 1.0 i. u. were maintained for only a short time, and bacteriostatic levels of over 0.1 i. u./kg. for only 3-4 hours. With procaine penicillin at a dosage of 3,000 i. u./kg., levels of over 0.1 i. u./ml. were maintained for 10-12 hours.—F. R. PAULSEN.

FREYBURGER, W. A. & JOHNSON, L. E. (1956). Blood levels and urinary excretion of orally administered neomycins B and C in dogs.—*Antibiot. & Chemother.* **6**, 586-588. [Spanish summary pp. 619-620.] [Authors' summary modified.] **587**

After oral administration to 4 dogs of 120 mg./kg. of neomycins B and C, no significant differences in blood level or urinary excretion were observed. Maximum blood levels not exceeding 17 µg./ml. were attained within 2 hours. From 3 to 6% appeared in the urine within 24 hours.

See also *absts.* 399 (aureomycin in leptospirosis); 419 (antricyde); 420 (netropsin); 426 & 432 (furazolidone); 428 (coccidiostatic drugs); 434 (nicarbazin); 435 (allyl acetone); 437-438 (hemosporidin); 439 (nivaquine); 498-500 (piperazine anthelmintics); 502 (anthelmintics); 548 (Martindale's Extra pharmacopoeia).

## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

HAFEZ, E. S. E., BADRELDIN, A. L. & SHARAFELDIN, M. A. (1956). Heat-tolerance studies of fat-tailed sheep in the subtropics.—*J. agric. Sci.* **47**, 280-286. **590**

Body temp. and respiration rate varied with the season and breed; they were not influenced by pregnancy. Diurnal variations were uniform in the different groups and followed changes in environmental temp. The skin temp. varied from 33.7° to 39.7°C. according to the season and body region. It was highest in the middle and upper parts of the tail, the thoracic region of the back and the middle region of the scrotum; it was lowest in the upper and lower regions of the scrotum, the lower part of the tail and the ventral aspect of the neck; it was intermediate in the breast region. Skin temp. and respiration rate were lower in docked rams than in controls.—T.E.G.R.

LOCKART, L. W. (1956). Birthcoat of lambs and adult fibre diameter.—*Aust. J. agric.*

VAN TIENHOVEN, A., THOMAS, H. C. & DRESEN, L. J. (1956). The effect of sulfa-methazine feeding on the thyroids, combs and testes of single comb White Leghorn cockerels.—*Poult. Sci.* **35**, 179-191. **588**

Sulphamethazine [sulphadimidine] was fed to cockerels from day-old to 16 weeks at concentrations of 0.1% or 0.2% of the food. There was evidence of larger combs, precocious spermatogenesis and increased thyroid weights. It is suggested that the effect of the drug on the testes was related to an effect on the thyroid.

—S. BRIAN KENDALL.

VOLINI, M., STUBBS, R. K. & ERCOLI, N. (1956). Trypanocidal antibacterial, and antifungal effectiveness of monothiuronium derivatives.—*Antibiot. & Chemother.* **6**, 603-606. [Spanish summary: p. 621. Authors' summary modified.] **589**

The chemotherapeutic activity of octyl, tetradecyl and coco-monoisothiuronium chlorides was studied. All 3 compounds influenced the course of *Trypanosoma equiperdum* infection in mice; the coco-isothiuronium derivative appeared the most effective. No effect was observed on *Borrelia novyi* and *Streptococcus pyogenes* infections. They were very active *in vitro* against trypanosomes, certain fungi, and Gram-positive and Gram-negative bacteria.

Res. **7**, 152-157. [Author's summary copied verbatim.] **591**

Birthcoat hairiness is significantly correlated with adult fibre diameter variability, the coarser birthcoats being more variable. Birthcoat grade is not correlated with average fibre diameter, but is strongly correlated with the difference between diameters of primary and secondary fibres and with variability of primary, but not of secondary, fibres. A correlation of 0.83 was found between birthcoat grade and primary-secondary diameter difference in the adult.

LOCKART, L. W. (1956). Variation in wool production per unit area of skin.—*Aust. J. agric. Res.* **7**, 158-161. **592**

The contention of Galpin (*J. agric. Sci.* (1947). **37**, 275) that wool production per unit skin area is constant for all sheep (under optimal conditions) is discussed. Available data are

summarized. Neither these nor Galpin's own data, on re-examination, support the hypothesis.

—H. N. TURNER.

PAREDES, J. R. (1956). Causas y mecanismo de la muda en las gallinas. [**Causes and mechanism of moulting in fowls.**] — *Rev. Patronato Biol. anim., Madrid*, **2**, 95-175. [English and French summaries.] **593**

P. studied the physiology of the moult in 72 fowls of both sexes. In entire females (controls) hypofunction of the gonads during moulting was manifested by changes in the comb and wattles. In caponized males the moult was much more severe than in entire males, and there were two peak periods; the first moult after ovariectomy in females was of this type, but the subsequent one resembled that in entire males; after what was considered to be complete extirpation of the ovary the moult and the intermoult were of the type observed in capons. Thyroidectomy had a similar effect in males and females: a decrease in loss of feathers both during the moult itself and in the intermoult period, the periodicity being maintained even when there had been partial or total extirpation of the gonads.—F.E.W.

ANON. (1956). Agriculture, food supplies, and atomic radiation.—*Science*, **124**, 63-66. **594**

Atomic radiation is useful in physiological research for the study of nutrition, metabolism and the functional activity of organs or parts thereof. Salvage or disposal of the experimental animals, especially the larger ones, presents a problem limiting research owing to financial considerations.—T.E.G.R.

RADELEFF, R. D. & WOODARD, G. T. (1956). Cholinesterase activity of normal blood of cattle and sheep. — *Vet. Med.* **51**, 512-514. [Authors' summary copied *verbatim*.] **595**

Using an electrometric method for the determination of cholinesterase activity, the mean value for 253 samples of bovine erythrocytes was found to be between 0.46 and 0.47 delta pH unit per hour, the range 0.17 to 0.96. For 180 sheep the mean was between 0.16 and 0.17, the range 0.08 to 0.04. No significant cholinesterase activity was present in the plasmas of sheep or cattle.

MARKUS, J. (1956). The inhibitory effect of lactation on oestrus in ewes. — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I, pp. 115-117. [French summary.] **596**

Genital organs from 1,327 ewes were examined. There was a slow decrease in apparent

reproductive activity from October to January, then a rapid drop to May followed by an equally fast rise. In April just over 40% showed activity. But in one Merino stud there was a peak conception rate 7 weeks after lambing, not reached again until the hand-milked ewes went dry. A sudden increase in the vitamin A content of the blood serum was observed in lactating ewes turned out in November to sugar beet fields and consuming up to 4-5 kg. daily; more than half these ewes conceived shortly afterwards. There was evidence that anoestrus was maintained metabolically through the low feed intake of carotene, calcium and phosphorus. [The possible influence of other factors than lactation, e.g. that of light, is not considered.]

—F. L. M. DAWSON.

NATAF, B., SFEZ, M., MICHEL, R. & ROCHE, J. (1956). Métabolisme des iodures chez les ratte gestantes et les foetus. Concentration de l'iode radioactif par le placenta. [**Metabolism of labelled iodine in the pregnant rat and foetuses.**]—*C. R. Soc. Biol., Paris*, **150**, 324-327. **597**

After extirpation of the thyroid gland in rats towards the end of gestation, a tracer dose of radioactive sodium iodide was injected i/m, blood samples being withdrawn every 30 min. for 5 hours and the radioactivity of the plasma recorded; individuals were killed at intervals of 80 min. to 22 hours after injection and maternal and foetal blood samples withdrawn simultaneously. The foetal blood plasma was more radioactive than that of the dam from the end of the first hour after injection. When the tracer dose was injected into the foetuses the radioactivity of the foetal plasma remained, throughout, higher than that of the dam. Accumulation of  $I^{131}$  in the placenta was greater when the dam had been injected. The regulative role of the placenta is therefore selective towards the end of gestation, favouring transfer of ions from the dam to the foetus.—F.E.W.

SINGH, O. N., HENNEMAN, H. A. & REINEKE, E. P. (1956). The relationship of thyroid activity to lactation, growth, and sex in sheep.—*J. Anim. Sci.* **15**, 625-630. **598**

Lambs suckled by ewes with high thyroid activity grew better than those suckled by ewes with low thyroid activity. The average daily *l*-thyroxine secretion rate of 21 lambs was: ewe lambs 0.08 mg./100 lb. body wt., ram lambs 0.07 mg. and wethers 0.05 mg. Weaned ewe lambs with high thyroid activity grew faster than those with low thyroid activity.—M.G.G.



SJÖLIN, K. -E. (1956). **Lack of Christmas factor in horse plasma.**—*Nature, Lond.* **178**, 153. **599**

By means of the thrombin instead of the thromboplastin generation test, the prolonged clotting time of horse blood, previously reported [V.B. **26**, 552] to be due to a deficiency of anti-haemophilic factor, can be shown to be due to lack of the Christmas factor.—A. ACKROYD.

SMITH, R. N. & MEADOWS, G. W. (1956). **The arrangement of the ansa spiralis of the ox colon.**—*J. Anat., Lond.* **90**, 523-526. [Authors' summary modified.] **600**

A brief description is given of part of the alimentary tract of the ox with special reference to the colon primum. An analysis of the ansa spiralis of 735 cattle showed that 711 or 96.7% had a regular spiral. Approx. 71% had two centripetal coils and 24% had one and a half centripetal coils. Diagrams are given of some of the irregular patterns. The results are compared with those from a survey of the structure in sheep [V.B. **25**, 3031].

DOBSON, M. J., BROWN, W. C. B., DOBSON, A. & PHILLIPSON, A. T. (1956). **A histological study of the organization of the rumen epithelium of sheep.**—*Quart. J. exp. Physiol.* **41**, 247-253. [Authors' summary modified.] **601**

The papillae of the surface of the rumen of sheep had a rich blood and lymphatic supply, in intimate contact with the basal layer of the stratified squamous epithelium. The basal layer consisted of columnar cells which, in the papillary bodies, were arranged round the capillaries. Cells similar to "prickle" cells of the skin were present in the transitional layer between the basal columnar cells and the outer keratinized layers.

BELL, F. R. & LAWN, A. M. (1956). **Delineation of motor areas in the cerebral cortex of the goat.**—*J. Physiol.* **133**, 159-166. **602**

See also abst. 526 (serum iron in normal horses).

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

KOLOBOLOTSKI, G. V. (1956). **[Determination of bacterial contamination of meat by an oxidizing colour reaction.]**—*Veterinariya, Moscow.* **33**, No. 8. pp. 36-42. [In Russian.] **605**

A chemical test for bacterial toxins in meat was based on the assumption that they consisted of polysaccharides, and caused a lowering of the oxidation-reduction potential of the meat. 10 g.

The experiments described were to obtain information on the stimulable areas of the goat cortex before ablation experiments designed to assess the part played by the cerebral cortex in the control of the ruminant stomach. The cerebral cortex of castrated male goats, 1-12 months old, was stimulated with unipolar and bipolar electrodes. The authors discussed the pyramidal tract of ungulates in relation to that of primates, and it is suggested that ipsilateral fibres from the middle longitudinal gyrus of goats may subserve a function similar to that of the contralateral fibres of the precentral gyrus of primates. The evoked responses, being identical from all the goats, indicated that maturation of the cerebral cortex does not occur after birth.—D. S. PAPWORTH.

SMITH, R. N. (1956). **The proximal sesamoid of the domestic ruminants. Is it the vestige of a second metatarsal?**—*Anat. Anz.* **103**, 241-245. [In English.] **603**

After examining limbs of sheep foetuses, S. answered this question in the negative.—R.M.

GLENISTER, T. W. (1956). **The development of the penile urethra in the pig.**—*J. Anat., Lond.* **90**, 461-477. [Author's summary modified.] **604**

G. examined pig foetuses from 11 to 125 mm. crown-rump length in order to see if incorporation of the penis in the abdominal wall affects the development of the penile urethra. Development was essentially similar to that already described by the author in man [J. Anat., Lond. (1954). **88**, 413]. The penile tip is drawn forward to the umbilical region by a fibromuscular attachment of the distal part of the penis to the umbilical sphincter. The relative importance of the contributions of ectoderm and endoderm to the urethral lining is discussed.

of meat was ground up with 10 ml. normal saline and 10 drops 0.1 N sodium hydroxide soln. The mixture was boiled to precipitate protein and, after adding 5 drops 5% soln. oxalic acid, was filtered to obtain a clear filtrate. The following were added to 2 ml. of the filtrate:—1 drop 1% alcoholic soln. cresol blue, 3 drops 0.5% soln. silver nitrate, 1 drop 40% HCl. After shaking, 0.15 ml. 1% soln. potassium perman-

ganate was added and the tube was again shaken. A control tube was set up with saline or extract of uncontaminated meat. The result was read against a white background immediately after mixing and again after 10–15 min. If the test was positive, the tube remained a bluish-green colour. If it was negative a reddish coloration was obtained, which disappeared after 30–40 min. A violet coloration was taken to indicate the presence of a trace of toxin. Toxins of aerobes were said to give a bluish coloration, while those of anaerobes gave a greenish coloration.—R.M.

KOHN, G. D. (1956). **Compound 1080—its use as a rabbit poison in Victoria.**—*J. Dep. Agric. Vict.* **54**, 279-283. **606**

A description is given of the poisonous effects and the minimum lethal doses of "compound 1080" (sodium fluoroacetate). The main baits used are carrots, oats and apples, and pre-feeding is carried out over two or three nights.

See also absts. 401–402 (canicola fever in man); 484 (ovine contagious pustular dermatitis in man); 494 (gulls as carriers of *Taenia* eggs).

## REPRODUCTION AND REPRODUCTIVE DISORDERS

RIKMENSPoEL, R., VAN HERPEN, G. & VAN DAM, G. C. (1956). **Physical investigations on the movements of bull sperm cells.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 19-20. [French summary.] **608**

A photo-electric method was developed for measurement of the velocity, frequency of head rotations and tail waves of individual spermatozoa. The percentage of motile cells in a sample could be estimated. These results were cross-checked by means of synchronized cinematograph films of the spermatozoa. Mean speed of diluted samples varied from 40–45  $\mu$ /sec. Head rotation and tail waves were synchronized. There was linear relationship between velocity and frequency of rotation.

—F. L. M. DAWSON.

FLIPSE, R. J. (1956). **Metabolism of glycine by bovine spermatozoa.**—*Science*. **124**, 228. **609**

Studies of the metabolism of glycine- $C^{14}$  in the presence of bovine spermatozoa showed from the products recovered that the pathways involved may be similar to those observed in other mammalian tissues. Whilst 0.01M glycine was detrimental to survival of the spermatozoa, 0.1M glycerine increased their survival. It was

The extremely toxic nature of 1080 had led to regulations to guard against its misuse, and details of these, as they apply to Victoria, are given. This compound is said to be the most effective rabbit poison in use in Victoria.

—R. I. SOMMERVILLE.

LUTYŃSKI, W. (1956). **Srednie szkoły weterynaryjne. [Schools for the training of veterinary technicians in Poland.]**—*Méd. vét., Varsovie*. **12**, 561-562. [In Polish.] **607**

There are 8 such schools in Poland. The course lasts 4 years and apart from specialized technical training, general education, including one foreign language, is provided. About 10% of the graduates can qualify for veterinary university studies. The tuition in the schools is free of charge and about 60% of the students receive grants for board and lodging. In addition there are 4 agricultural schools for veterinary nurses, where an 11-month course is in operation.—M. GITTER.

postulated that utilization of glycine may have a sparing effect on glycolysis in bovine spermatozoa.—D. S. PAPWORTH.

TEITELBAUM, H. A. & GANTT, W. H. (1956). **Effect of starvation on sperm count and sexual reflexes.**—*Science*. **124**, 363-364. **610**

In 3 dogs out of 4 the number of spermatozoa per ml. of semen increased during a starvation period of 5 days. In a second trial a year later, the count per ml. rose in all 4 dogs during 10 days of starvation and the quantity of semen increased in three. No correlation was found between the number of spermatozoa and the period of enlargement of the bulbus cavernosus.—M.G.G.

LAKE, P. E. & WOOD-GUSH, D. G. M. (1956). **Diurnal rhythms in semen yields and mating behaviour in the domestic cock.**—*Nature, Lond.* **178**, 853. **611**

Semen was collected by lumbar massage from 12 cocks between 8.30 and 9.30 a.m., midday and 1.0 p.m. and between 5.0 and 6.0 p.m. The highest yield of semen and the greatest absolute number of spermatozoa occurred during the afternoon period. Of 19 matings performed by 2 control cocks, 13 occurred between 5.0 and 6.0 p.m.—M.G.G.



BELONJE, C. W. A. (1956). The operation for retroversion of the penis in the stallion.—*J. S. Afr. vet. med. Ass.* 27, 53-55. 612

The penis was separated from the prepuce and drawn backwards through a skin incision about 6 inches dorsal to the scrotum. A stallion so treated was used as a "teaser" to detect oestrus in Thoroughbred mares, [see also *V.B.* 26, 2746].—R.M.

LINDAHL, E. (1956). On male and female sperm antagglutins.—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 14-16. [French summary.] 613

The male antagglutin contains, attached to a protein, a dialysable active group containing sulphate residues and a tocopherol derivative. The female substance contains this derivative attached to carbohydrate residues, but no protein or sulphur. A technique was devised for accurate quantitative estimation of the male substance. Four men and 3 bulls of low fertility yielded semen either free from antagglutin or with inactive (oxidized) or neutralized product. No work has been done with cows, but in women with infertility of uncertain aetiology the antagglutin was found to be inactivated.

—F. L. M. DAWSON.

KIHLSTRÖM, J. E. (1956). The effect of artificial light upon the production of male sperm antagglutin in rabbits.—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 17-18. [French summary.] 614

Semen was collected from 3 pairs of rabbits at short regular intervals from the middle of October to the end of January. One of each pair was treated increasingly up to 10 min. daily by irradiation from a "sunlamp". The antagglutin concentration in the semen was doubled in the treated animals, after a two-month time-lag.—F. L. M. DAWSON.

DAUZIER, L. & THIBAUT, C. (1956). Recherche expérimentale sur la maturation des gamètes mâles chez les mammifères, par l'étude de la fécondation 'in vitro' de l'oeuf de lapine. [Maturation of spermatozoa studied using in vitro fertilization of rabbit ova.] — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 58-61. [In French. English summary.] 615

1,308 rabbit eggs were fertilized *in vitro* by spermatozoa "capacitated" in any part of the female genital tract. A minimum period of 8 hours was required for capacitation; this yielded 3.3% of eggs fertilized, whereas after 12

hours the peak of 25.4% was reached. Probably capacitation does not occur in the peritoneal cavity.—F. L. M. DAWSON.

GREENWALD, G. S. (1956). Sperm transport in the reproductive tract of the female rabbit.—*Science*. 124, 586. 616

Fallopian tubes were ligated at various intervals, up to 5 hours, after mating. The does were killed 48-52 hours after mating and the trapped ova examined for evidence of fertilization. At 5 hours the tubes contained enough spermatozoa to fertilize all the viable eggs. Between the 4th and 5th hour there was a simultaneous increase in the percentage of fertilized eggs and in the number of spermatozoa. Before this period there were considerable individual variations in the rate of entry of spermatozoa into the tubes.—T.E.G.R.

MOBERG, R. (1956). The white blood picture during parturition in cows, with special reference to retained foetal membranes.—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*, 1956. Sect. II. pp. 58-60. [French summary.] 617

Blood samples from 194 cows (aged 3-14 years) with retained placenta revealed: leucopenia due to neutropenia which in some cases produced agranulocytosis; interference with neutropoiesis accompanied by an increase in the number of staff-shaped neutrophils; and lymphocytosis in uncomplicated cases.—T.E.G.R.

WINQVIST, G. (1956). Bone marrow changes at parturition in cows with special reference to retained foetal membranes.—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*, 1956. Sect. II. pp. 61-62. [French summary.] 618

A study was made of bone marrow samples from 15 cows 1-8 days after normal parturition and from 15 cows with retained placenta, 1-10 days after calving. In the specimens from normal deliveries there was a shift to the left in the neutrophile granulocytes and a reticulocyte reaction. In animals with retained placenta, apart from neutropenia, there was also marked reticulocyte reaction, and an even more marked shift to the left in the neutrophile group as well as toxic changes in the immature forms. The changes closely resembled those observed in human bone marrow, in cases of toxic or, rather, anaphylactic agranulocytosis, and it is considered that a similar reaction is caused by retained placenta in the cow.—T.E.G.R.

PHILIPSEN, H. (1956). Continued investigations on twin-pregnancy among cattle, and two methods to prevent twin-birth.—*Proc. IIIrd*

- Int. Congr. Anim. Reprod., Cambridge.* Sect. I. pp. 90-92. [French summary.] 619
- (1). P. claimed that rupture of one of two follicles at insemination time was highly effective [but no controls were kept].
- (2). Crushing of the embryo was successful in 5 out of 13 cases; in a later series, bursting of the amnion bladder was successful in about half the cases. 18% abortions were observed in 100 unoperated twin pregnancies.
- F. L. M. DAWSON.
- TUCHMANN-DUPLESSIS, H. & MERCIER-PAROT, L. (1956). Influence d'un corps de chélation, l'acide éthylènediaminetétraacétique sur la gestation et le développement foetal du rat. [Action of a chelating agent, ethylenediamine tetra-acetic acid, on gestation and foetal development in rats.] —*C. R. Acad. Sci., Paris*. 243, 1064-1066. 620
- Ethylenediamine tetra-acetic acid disturbed foetal development when administered to pregnant rats: 9% of offspring born alive had polydactylism, double tail, or general or local oedema.—R.M.
- COLLERY, L. (1956). Contrast hystero-graphy in the bitch.—*Irish vet. J.* 10, 99-101. 621
- Attempts to demonstrate the reproductive tract of 8 bitches by means of contrast hystero-graphy met with various technical difficulties.
- R.M.
- ROBERTSON, W. G. & MIXNER, J. P. (1956). Chemical determination of 17-hydroxycorticosteroids in the blood of cattle and some indications of its physiological significance.—*J. Dairy Sci.* 39, 589-597. 622
- A method by which 81% of plasma corticosteroids can be extracted and assayed is described. The mean plasma 17-hydroxycorticosteroid value of 23 pregnant cows was 9.77  $\mu\text{g.}\%$  and that of 20 non-pregnant animals was 4.58  $\mu\text{g.}\%$ .—JOHN SEAMER.
- LEATHEM, J. H. (1956). The influence of steroids on prepuberal animals.—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge.* Sect. I. pp. 13-14. [French summary.] 623
- Both testosterone propionate and the oestradiol derivative delayed the onset of luteinization in unstated numbers of mice, 15-20 days old. In males, 10-15 days old, maturation of the testes was delayed in proportion to dose by oestrogen, and only slightly by androgen. Both males and females dosed with either hormone at 5 days old became permanently infertile.
- F. L. M. DAWSON.
- BIELAŃSKI, W., EWY, Z. & PIGONOWA, H. (1956). Differences in the level of gonadotrophins in the serum of pregnant mares.—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge.* Sect. I. pp. 110-111. [French summary.] 624
- Hormone assay was by spermatozoa-release tests on frogs, (*Rana esculenta*) and by the Cuboni test for oestrogen. From 110 parallel tests on 50 mares a curve of hormone concentration throughout pregnancy was plotted. Light breeds had a five times higher concentration than heavy breeds. With pregnant donkeys, and mares pregnant to donkey stallions, the frog test was uniformly negative but the Cuboni test positive.
- F. L. M. DAWSON.
- GATES, A. H. (1956). Viability and developmental capacity of eggs from immature mice treated with gonadotrophins.—*Nature, Lond.* 177, 754-755. 625
- Percentage survival of transplanted eggs from immature and from adult donors were 35.85 and 38.75%, respectively. The growth of  $3\frac{1}{2}$  day mouse eggs in a host uterus of corresponding gestational stage was not appreciably affected by transplantation; the developmental capacity of eggs from immature mice treated with gonadotrophin was much the same as that from spontaneous ovulation in adult mice.
- T.E.G.R.
- RAYNAUD, A. & RAYNAUD, J. (1956). La production expérimentale de malformations mammaires chez les foetus de souris, par l'action des hormones sexuelles. Deuxième partie. [Experimental production of mammary malformations in the mouse foetus by the action of sex hormones. II.]—*Ann. Inst. Pasteur.* 90, 187-220. [English summary.] 626
- A single injection of oestradiol propionate (50-100  $\mu\text{g.}$ ) on the 12th or 13th day of pregnancy induced malformations in the mammary glands of the foetuses, e.g. partial or complete arrest of mammary growth; cutaneous pouches or malpighian invaginations at the site of some of the glands; formation of glands with mammary and malpighian elements; changes in size and shape. The frequency of these deformities increased with the dose. It is considered that many congenital malformations are due to the action of sex hormones.—T.E.G.R.
- AVERILL, R. L. W. (1956). The use of oestrogens in fat lamb production.—*Proc. Brit. Soc. Anim. Prod.* 1955. pp. 18-29. [Author's summary modified.] 627
- Oestrogen implants caused slight but insign-



nificant gains in weight over periods of 51 to 140 days in unweaned lambs of 27 to 30 lb. initial live wt. Carcass fat was reduced but carcass conformation was apparently unaltered. The rate of absorption from the tablets was apparently affected by the dosage, the efficiency with which they were implanted in the subcutaneous site, and by an obscure individual susceptibility of certain lambs. Death associated with rectal and vaginal prolapse occurred as a result of oestrogen treatment in 4 lambs.

BAÏSSET, A., BESSOU, P., MONTASTRUC, P. & PLANEL, H. (1956). Action hémorragique de fortes doses de benzoate d'oestradiol. Etude expérimentale sur le chien. [**Haemorrhage produced by large doses of oestrogen in dogs.**]—*C. R. Soc. Biol., Paris*. **150**, 788-790. **628**

Six dogs injected i/m over a period of 3-5 days with 1.5-7.5 mg./kg. of oestradiol benzoate died after 5-17 days from multiple haemorrhages, chiefly in the digestive and urinary systems.—M.G.G.

BAUER, H. (1956). Der Anteil der Fruchtbarkeitsstörungen an den Ausscheidungsgründen der Bullen. [**Proportion of bulls rejected because of infertility.**]—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 77-79. [In German. English summary.] **629**

The average age at disposal of 3,632 bulls was 4.7 years; 113 (3%) were infertile through disease and 368 (10%) through impotence or lack of libido. 82 (28%) of the 291 sons of these 368 bulls were disposed of for the same reason. Measures to increase fertility in bulls are proposed.—M.G.G.

BROCHART, M. (1956). Relation entre la fécondité des vaches laitières et la teneur en calcium et phosphore des poils. [**The calcium and phosphorus content of the hair in the study of infertility in cows.**]—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 8-10. [In French. English summary.] **630**

The Ca and P content of the hair in the poll region was found to be a more reliable early diagnostic indicator of subfertility in a herd than the blood Ca and P content. In a comparative study of 54 fertile and 53 subfertile cows selected from 23 small Holstein herds, the maximum fertility coincided with Ca values of 0.19-0.21 mg. per 100 g. hair and P values of 0.02-0.022 mg. per 100 g. In the subfertile cows, variations in the Ca and P values were independent; the P values could be high with Ca values inter-

mediate or low, or *vice versa*; high values were the most frequent. It was shown that excess of Ca in the hair could be of either endogenous origin (from compensatory osteolysis) or exogenous (dietary) origin, and that excess of P was the result of a compensated P deficiency: lowered values of Ca and P were probably a result of failure in the compensatory mechanism.

—F. L. M. DAWSON.

I. JAKOBSEN, F. & TEIGE, J. (1956). Effektiviteten af udklemning af corpus luteum hos kvaeg. [**Effect of enucleation of the corpus luteum in dairy cattle.**]—*Beretn. Forsøgslab. Kbh.* No. 291. pp. 32. [In Danish. English and German summaries.] **631**

II. TEIGE, J. & JAKOBSEN, K. F. (1956). Investigation on the effect of enucleation of corpus luteum in dairy cattle.—*Proc. IIIrd Int. Congr. Anim. Reprod.* Cambridge, 1956. Sect. II. pp. 54-55. [French summary.] **632**

I. A detailed study of the breeding records of 2,746 cows and heifers in which the genital organs were clinically normal, at two artificial insemination centres, showed that enucleation of the corpus luteum, even when performed twice or more often during one breeding season, had no deleterious effect on fertility either in the breeding season during which it was performed or in the following season. The response to enucleation was slightly poorer in March, April and May than in other months.

II. An account in English of work already published elsewhere (see I. above).—F.E.W.

LAING, J. A. & YOUNG, G. B. (1956). **Observations on testicular hypoplasia in British cattle.**—*Proc. IIIrd Int. Congr. Anim. Reprod.* Cambridge, 1956. Sect. II. pp. 68-70. [French summary.] **633**

From a preliminary study it is concluded that hypoplasia of the testicle in bulls of various breeds in Britain is, possibly, a hereditary condition.—T.E.G.R.

MOSS, S., SYKES, J. F. & WRENN, T. R. (1956). **Some abnormalities of the bovine endometrium.**—*J. Anim. Sci.* **15**, 631-639. **634**

Examination of tissue from the body of the uterus and from the uterine horns of 77 cows (including 12 first service cows and 10 repeat breeders, all slaughtered 11-16 days after mating) revealed certain abnormalities. These included lymphoid nodules in the endometrium and changes in the uterine glands and periglandular connective tissue.—T.E.G.R.

NORDLUND, S. (1956). **A new type of genital malformation in Swedish Friesian cattle.**—

*Proc. IIIrd Int. Congr. Anim. Reprod.*  
Cambridge, 1956. Sect. II. pp. 80-82.  
[French summary.] 635

Deformities of the genital tract of 12 out of 410 heifers sired by the same bull are described. The vagina was most commonly involved, the changes being similar to white heifer disease. Changes in the cervix were also seen. In some of the animals one uterine horn was absent, while in one case only the vestibule of the vagina was present. The vulva, Fallopian tubes and ovaries were normal.—T.E.G.R.

VAN SCHAİK, P. (1956). Afwijkingen aan de achterklauwen en achterbenen bij het zwart-bonte rund. [**Abnormalities of the hind claws and hind limbs in Dutch Friesian cattle.**]—*Tijdschr. Diergeneesk.* 81, 624-625. 636

S. stated that bruising and infected wounds of the sole, as well as hoof deformities, were

*See also absts.* 373 (S. abortus-equi infection in stallions); 375-387 (brucellosis); 390 (leptospirosis abortion in cows); 405-408 (Vibrio fetus); 420 (dourine); 423-425 (bovine trichomoniasis); 459 (virus abortion in mares); 510 (nutritional causes of insufficient labour and stillbirth in pigs); 521 (oilcakes and bovine sterility); 531 (alpha tocopherol and horse breeding); 539 (passage of exogenous thyroxine and iodine between dam and foetus in rabbits); 596 (lactation and oestrus in ewes); 597 (iodine metabolism in pregnant rat and foetus).

becoming more common in Dutch Friesian cattle, partly as a result of abnormal conformation of the hind limbs and partly from too small, narrow and pointed hind claws. The resulting lameness shortened the milking life of a cow.

—R.M.

BRUNSON, C. C., GODFREY, G. F. & GOODMAN, B. L. (1956). **Heritability of all-or-none traits: hatchability and resistance to death to ten weeks of age.**—*Poult. Sci.* 35, 516-523. 637

Hatchability (of fertile eggs and of total eggs) and viability up to 10 weeks of age were not influenced by crossbreeding. Heritability was higher in pure breeds than in cross breeds; in general, it was lower at the higher hatchability percentage. Considerable differences in viability were observed among the different breeds and cross breeds studied.—T.E.G.R.

## ZOOTECHNY

HEWITT, A. C. T. (1956). **Fire, acid and caustic branding of cattle.**—*J. Dept. Agric. Vict.* 54, 246-247. 638

Fire-branding was found to be superior to caustic and acid branding.—R. I. SOMMERVILLE.

BEATTIE, A. W. & CHAPMAN, R. E. (1956). **Sampling fleeces to estimate yield of clean wool.**—*Qd J. agric. Sci.* 13, 13-18. 639

Fleeces from 85 Merino ewes and wethers were skirted, separated into 12 portions according to position, and scoured. Yield of clean wool decreased from shoulder to rump, and the yields along the back were slightly higher than those on the sides. The yield of all regions was highly correlated with that of

the whole fleece and that of the skirted fleece, but the mid-side region is the most convenient sampling site.

TORDAY, F. (1956). Az elektromos kábítás gyakorlati alkalmazása sertésen és borjún. [**Electronarcosis of pigs and calves.**]—*Mag. állator. Lapja.* 11, 311-316. [In Hungarian. English and Russian summaries. Abst. from English summary.] 640

The instrument consisted of a vibrator (run off a 6-volt, 14 amp. battery) and a transformer, producing a current of 50-100 V. It was used on 500 pigs and 10 calves and only 3 pigs were lost. Narcosis is of short duration.

## TECHNIQUE AND APPARATUS

MEYER, P. C. (1956). **The histological identification of osteoid tissue.**—*J. Path. Bact.* 71, 325-333. 641

A description of a comparative study of the methods available to identify osteoid tissue by histological techniques. Of the four methods of decalcification used, Muller's fluid and ethylenediaminetetraacetic acid were the most efficient. Decalcification was not found to alter the amount or distribution of recognizable osteoid, but the facility with which osteoid tissue could be recognized varied with the

method. A number of staining techniques were used but haematoxylin and eosin with careful differentiation of the haematoxylin and avoiding overstaining by the eosin gave the best result. The reaction obtained by the periodic acid-Schiff technique suggests that basophilic staining of calcified bone depends, at least in part, on the presence of carbohydrate material. Critical results determining the presence of osteoid tissue were obtained by comparison of thin sections of bone with the corresponding microoradiographs.—W. E. PARISH.



- I. GRUNERT, E. (1956). De techniek van de biopsie der uterismucosa bij het rund en de benutting van de histologische bevindingen. [**Biopsy technique for the uterine mucosa of the cow and the evaluation of histological findings.**] — *Vlaam. diergeneesk. Tijdschr.* **25**, 57-67. [In Flemish, English, French and German summaries.] **642**
- II. STRIKWERDA, R. (1956). Een gewijzigd biopsie-apparaat voor het histologisch en micro-biologisch onderzoek van de uterus bij

het rund. [**A modified biopsy apparatus for histological and microbiological examination of the bovine uterus.**] — *Tijdschr. Diergeneesk.* **81**, 705-710. [In Dutch, English and German summaries.] **643**

I & II. Two different improved biopsy instruments, for use in the uterus of the cow, were described. The first was a modification of that described by Miller [*V.B.* **22**, 2277]. The second was based on those employed by Brus [*V.B.* **25**, 4186] and Kampelmacher [*V.B.* **25**, 239].—R.M.

See also absts. 341 (g. pig inoculation in TB. diagnosis); 445 (cultivation and titration of F. & M. disease virus in tissue culture); 452 (cultivation of Anjeszky's disease virus in chick embryos); 463 (monolayer tissue culture on glass); 523 (Sulkowitch test for blood calcium content in cattle).

## BOOK REVIEWS

HENNING, M. W. (1956). **Animal diseases in South Africa. Being an account of the infectious diseases of domestic animals.** pp. xv + 1239. Johannesburg: Central News Agency, Ltd. 3rd Edit. (Completely revised) 110s. **644**

A new edition of "Henning" is of importance to all veterinarians working in tropical and subtropical parts of the world and this third edition published eight years after the second is very welcome. Accounts are given of a number of diseases which were not dealt with previously; these include Rift Valley fever, Nairobi sheep disease, porcine babesiosis, eperythrozoonosis, Corridor disease, ovine abortion, virus pneumonia of pigs, swine influenza, Rubarth's disease, leptospirosis, Q fever and others. There are a number of new illustrations. The rest of the text has been revised, rewritten and expanded to include new information. The result is a book considerably bigger than the second edition—1,239 pages as against 879. It is by far the most comprehensive book on tropical veterinary medicine and can be unreservedly recommended. It is remarkably free from typographical and other errors; a minor blemish in the eyes of the reviewer is the misspelling of *Vibrio fetus* as *Vibrio foetus*. The spelling used by Theobald Smith who named the organism was *V. fetus*.

A very useful feature of the book is the excellent historical accounts of the development of knowledge of the various diseases. Each chapter is followed by an extensive bibliography. Perhaps one of the most interesting chapters is that dealing with sweating sickness in calves and containing an account of Neitz's recent work on the role of *Hyalomma transiens*—work which indicates that the cause of the

disease is not an infective agent but rather a toxic substance, possibly analogous to that which causes tick paralysis.

ANON. (1956). U.S.A. **Animal diseases. Yearbook of Agriculture—United States Department of Agriculture.** 1956. pp. xiv + 591. Washington: U. S. Government Printing Office. \$2.00. **645**

The title "Yearbook of Agriculture 1956" may be a little misleading to those not acquainted with the practice of the U.S.D.A. in this respect. This is not a compilation of facts and statistics dealing with the work of the Department during 1956 but rather it is a textbook of veterinary medicine in North America. It is a successor to "Keeping Livestock Healthy" which appeared in 1942 and is so well known to veterinary surgeons throughout the world.

It is a very worthy successor and follows much the same plan but is brought up to date by inclusion of diseases which have come to notice since 1942.

Although written primarily for the stock owner it is a mine of information which will be welcomed by veterinarians whether they be practitioners, research workers, teachers or public health officials. It is the work of a large number of authors each dealing with a subject or subjects in which he has had special knowledge and experience. A good general index plus an index of scientific names and another of authors whose work is cited are provided and make for easy reference. Priced at 2 dollars it is extraordinarily good value.

WIRTH, D. [Formerly Director of the Medical Clinic in the Veterinary High School,

Vienna.] (1956). **Veterinary clinical diagnosis.** [Translated and revised by LITTLEJOHN, A. I.] pp. viii+232. London: Baillière, Tindall & Cox. 1st English Edit. 25s. **646**

Prof. Wirth's book has served Austrian veterinary students since 1934, and is now made available to English-speaking students. Miss Littlejohn has done a faithful translation of the original, and much new material, including 92 illustrations, concerning cattle and sheep has been added to correct Wirth's bias towards horses, dogs and fowls. There are other minor changes to make the book conform with British practices. A feature is a lucid account of percussion of the lungs—an otherwise neglected subject. Many of the original illustrations have been replaced by better ones (*e.g.* plates of worm-eggs and mange mites). The systematic treatment of the subject makes this book a valuable guide to clinical diagnosis.—R.M.

HARVEY, D. (1956). **Tables of the amino acids in foods and feedingstuffs.** pp. v+52. Farnham Royal: Commonwealth Agricultural Bureaux. Technical Communication No. 19 of the Commonwealth Bureau of Animal Nutrition. 15s. **647**

This work is a compilation of data, derived from the literature, on the content of eighteen amino-acids in foods of animal and vegetable origin. The data are presented in tabular form throughout. The foods are milk, eggs, meat, animal products, fish, crustacea, cereals, roots, vegetables, fruits, legumes, nuts, oil-seeds, grass, yeasts and mould proteins, and their corresponding products and meals. There is a bibliography comprising 182 references.

—M.G.G.

ANON. (1955). **The extra pharmacopoeia. (Martindale.) Volume II. Incorporating Squire's Companion.** pp. xxxi+1501. London: The Pharmaceutical Press. 23rd Edit. 57s. 6d. **648**

Volume II of the Extra Pharmacopoeia is a compendium of pharmacology, therapeutics, pharmaceutical and analytical chemistry, clinical biochemistry, and food law. Vol. I of the present edition, which is the pharmacopoeia proper, was published in 1952 [see *V.B.* **23**, 1785]. It is twelve years since the publication of the previous edition of Vol. II, and one notices the great increase in the number of pages and the inclusion of much new material, with references to recent literature, since then, *e.g.* information on radioactive isotopes. The list of proprietary medicines, showing their composition, has been retained. The two volumes of this work are valuable, if not unique, in the fields of therapeutics and pharmaceutical chemistry.

—R.M.

MACKENZIE, P. Z. [Senior Veterinary Inspector, Sudan Veterinary Service.] & SIMPSON, R. M. [Research Officer, Department of Veterinary Services, Kenya Colony.] (1956). **The African veterinary handbook.** pp. xi+281. Nairobi: Sir Isaac Pitman & Sons, Ltd. 2nd Edit. 18s. **649**

This second edition has been brought up to date and new material has been added. Dosages of most of the drugs mentioned are now given and there are charts of symptoms for each species of animal, to facilitate diagnosis. It remains a useful handbook for the owner of livestock in Africa.—R.M.

## BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BOURNE, G. H. & DANIELLI, J. F. (Edited by) (1956). **International review of cytology. Volume V.** pp. 570. London (& New York): Academic Books Ltd. \$11.50.

BUGHER, J. C., COURSAGET, J. & LOUTIT, J. F. (Edited by) (1956). **Progress in nuclear energy. Series VI. Biological sciences. Volume I.** pp. x+205. London: Pergamon Press. Ltd. 50s.

CLIFTON, C. E., RAFFEL, S. & STANIER, R. Y. (1956). **Annual review of microbiology. Vol. 10.** pp. vii+426. California: Annual Reviews, Inc. \$7.00.

FOLLEY, S. J. (1956). **The physiology and biochemistry of lactation.** pp. vii+153. Edinburgh (and London): Oliver & Boyd. 18s. 6d.

HARE, R. (1956). **An outline of bacteriology and immunity.** pp. ix+418. London (New York & Toronto): Longmans, Green & Co. 35s.

MAREK, J. & MÓCSY, J. (1956). **Lehrbuch der klinischen Diagnostik der inneren Krankheiten der Haustiere. [Text-book of the clinical diagnosis of internal diseases of domestic animals.]** pp. xv+627. Jena: Gustav Fischer Verlag. 5th Edit DM 40.



- MOZLEY, A. (1955). **Sites of infection. Unstable areas as sources of parasitic diseases: schistosomiasis and fascioliasis.** pp. x+86. London: H. K. Lewis & Co. 9s.
- NEWELL, F. W. (1956). **Glaucoma. Transactions of the first conference, December 5, 6, and 7, 1955, Princeton, N.J.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 251. New York: Josiah Macy, Jr. Foundation. \$4.50.
- PARKES, A. S. (Edited by) (1956). **Marshall's physiology of reproduction. Volume I: Part I.** pp. xix+688. London (New York & Toronto): Longmans, Green & Co. 3rd Edit. 150s.
- ROBERTS, S. J. (1956). **Veterinary obstetrics and genital diseases.** pp. xv+551. Ithaca, N.Y.: The Author. (Distributed by Edwards Brothers, Inc., Ann Arbor, Michigan.) \$10.50.
- ROTHSCHILD. (1956). **Fertilization.** pp. ix+170. London: Methuen & Co. Ltd. 18s.
- STRAFFORD, N., STROUTS, C. R. N. & STUBBINGS, U. V. (Edited by) (1956). **The determination of toxic substances in air. A manual of I.C.I. practice.** pp. xxvii+226. Cambridge: W. Heffer & Sons, Ltd. 35s.
- THOMPSON, H. V. & WORDEN, A. N. (1956). **The rabbit.** pp. xii+240. London: Collins. 16s.
- WENRICH, D. H., LEWIS, I. F. & RAPER, J. R. (Edited by) (1954). **Sex in microorganisms. A symposium presented on December 30, 1951 at the Philadelphia meeting of the American Association for the Advancement of Science.** pp. v+362. Washington: American Association for the Advancement of Science. 51s. 6d.
- ANON. (1956). **Corticosteroid therapy. The first hundred years.** pp. 92. Folkestone: Pfizer Ltd.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

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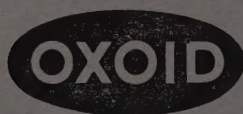
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